The Builder.

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ILLUSTRATIONS.

New Tower, St. John's Church, Cowley, Oxford.....Mr. G. F. Bodley, R.A., Architect.
Reredos, All Saints, Maidstone .....Mr. F. L. Pearson, F.R.I.B.A., Architect.
Design for English Church, Entebbe, Uganda .....By Professor Beresford Pite.
House, "Gwysaney" .....From a drawing by the late Mr. Arthur Baker.
Schools at Knowle, Bristol..... .....The late Mr. J. D. Sedding, Architect.

Illustration in Text.

Venetian Needlepoint Lace ..... Page 417

CONTENTS.

	PAGE
Heating by Hot Water	405
Notes	407
The Architectural Association	409
The Architectural Association: Visit to Charing Cross Hospital	412
Manchester Architectural Society	412
Sheffield Society of Architects and Surveyors	413
Sewage Purification Works for Small Populations	414
Example of Venetian Needlepoint Lace	417
Society of Medical Officers of Health	417
Illustrations :—	
Tower, St. John's, Cowley	418
Reredos, All Saints, Maidstone	418
English Church, Entebbe, Uganda	418
Illustrations (*contd.*) :—	
House, "Gwysaney"; and Schools at Knowle (Bristol)	418
The Institute of Builders	419
Use of Electricity in Factories	419
The London County Council	420
Applications under the London Building Act, 1894	420
Architectural Societies	421
Competitions	421
Books Received	421
Correspondence :—	
The Liability of Councils for Sanitary Inspectors' Errors	421
Greenstead Church	421
The Student's Column	421
Metropolitan Asylums Board	421
Obituary	421
General Building News	421
Stained Glass and Decoration	423
Appointments	423
Sanitary and Engineering News	423
Foreign	424
Miscellaneous	424
Capital and Labour	424
Patents	425
Some Recent Sales	425
Meetings	426
Prices Current	426
Tenders	427

Heating by Hot Water.

LONDON is a smoky city. It is a strange delight to see the dome of St. Paul's clearly defined, even from Hungerford Bridge, a short mile away; there are many days on which it is impossible for the clearest-eyed to see across Oxford-street or the Strand; and this opacity of the air is almost wholly due to sheer waste of household coal. After all these years of Smoke Prevention Acts, it is idle to lay the whole blame on factory chimneys. Domestic fires are the chief offenders. It is not our purpose at present to consider whether the open fire-grate can be so constructed as to prevent the formation of the greater part of its smoke, although this would be an interesting topic. We are merely concerned to say that the number of such fires would be greatly reduced if a supplementary method of warming were installed in every house containing, say, more than eight or ten rooms. There are many days in spring and autumn when the single fire of such a heating apparatus would render the lighting of three or four open fires unnecessary, and the furnace of the heating apparatus would probably yield less smoke than any one of the open grates.

The subject is of so much importance to the community as well as to the individual that we gladly welcome a new and greatly enlarged edition of a work* dealing with it in a practical and comprehensive manner. It is not our custom to devote much space to reviews of new editions of books, but in this case an exception to the rule may well be made. The third edition differs so much from the second, both in form and matter, as to be almost a new work. The size of the page has been increased from 7¼ in. by 5 in. to 9 in. by 6 in., and the number of pages from 220 to xvi., plus 344. In the second edition there were ninety-six illustrations and twenty-four chapters, in the third there are 142 illustrations and thirty-seven chapters. Much of the old matter has of course been brought forward into the third edition, but the figures given above show that much new matter has also been introduced.

The only alteration of any moment in the first chapter (on "The High-Pressure System") is in Table I., which is extended to give in greater detail the lengths of ¾-in. radiating pipes and the heating surface of the boiler coils required per 1,000 cubic ft. of air space for temperatures ranging from 55° to 300° Fahr. Chapter II. deals with a modification of the high-pressure system, in which a supply cistern with relief valve takes the place of the sealed expansion tube, and here, again, with the exception of one illustration and half a page of text, the matter remains as in the second edition. The chapter on bread-baking by hot water or steam includes three new illustrations with accompanying descriptions, but still remains inadequate. Chapters IV., V., VI., and VII. are reproduced verbatim, but some additional memoranda of a simple arithmetical nature are inserted in Chapter V., and a new table on the conducting and radiating powers of various materials is substituted for the old table in Chapter VII. There is also a new paragraph of merely historical interest on thermometers. Keith's automatic air valve is the only novelty in the next chapter.

The subject of boilers is now discussed in two chapters (IX. and X.) instead of one, and it is in these that we find the first new matter of any real importance. Illustrations of some modern sectional boilers of cast-iron have been obtained from the American Radiator Company and the Beeston Foundry Company, and the new hints on "Selection of a Boiler" are good, but nothing is said about the advantage which some sectional boilers possess in being easily extended, when, in consequence of additions to the building and for any other reason, more heating surface is required: It is not uncommon to find in a building to which additions have been made one or more supplementary boilers used in conjunction with the original inextensible boiler; if a sectional boiler had been used in the first instance, new sections could have been added, and the result would have been more economical in fuel and labour and more satisfactory in

* "Heating by Hot Water, Ventilation and Hot Water Supply." By Walter Jones, M.I.M.E. Third edition. London: Crosby Lockwood and Son. 1904.

heating. Chapters XI., XII., and XIII. contain no new matter, and the old "rules" for ascertaining the velocity of air currents "in chimneys or ventilating flues" remain as before; they do not include any allowance for friction or bends, or take into consideration the effect of winds and other disturbing influences, and are, for all practical purposes, as unreliable as those formulas for calculating the amount of radiating surface for heating rooms, which the author criticises so severely. In Chapter XIV. the table giving the diameters of main pipes for various quantities of radiating surface has been altered, the quantities being less than in the older table; thus, for 1¼-in. horizontal and 1-in. vertical mains the maximum radiating surface has been reduced from 100 sq. ft. to 80 sq. ft.; for 2-in. horizontal and 1½-in. vertical mains the radiating surface has been reduced from 600 sq. ft. to 300 sq. ft.; and for 3-in. horizontal and 2-in. vertical from 1,000 sq. ft. to 700 sq. ft. A table, copied from a report of Professor Ordway, has also been introduced, in which the relative efficiency of non-conducting materials is given; of the non-carbonising materials, loose calcined magnesia is accorded the first place, and "best slag wool" the second. Other tables relating to the areas and circumferences of circles have been extended, a new table giving the head and pressure of water inserted, and also a table giving the metrical equivalents of English sizes and weights of cast-iron pipes. The last contains a curious column of figures, stating the weight of pipes in kilogrammes per yard; to have been of service in foreign trade the equivalents of the weights in pounds per yard ought to have been given in kilogrammes per metre.

So far, it must be confessed, the third edition of Mr. Jones's book does not differ materially from the second, but the next two chapters, which together occupy forty-nine pages, now appear in the work for the first time. The first of the two is entitled "Radiation of pipe-surface as provided by different authorities for various buildings critically examined," and is an interesting piece of work, although it is questionable whether the criticism is always entirely fair. Hood's rule, for example, was not intended for extraordinary temperatures, but, as Mr. Jones himself points out on page 122, for the moderate temperatures required in "habitable rooms and public buildings" and also "for horticultural work," and it is therefore somewhat unfair to apply it for high temperatures from 90° to 120°. We hold no brief in favour of Hood's rule, which bears on the face of it every mark of empiricism and necessitates a good deal of guesswork on the part of the engineer when dealing with conditions in any way abnormal. Mr. Jones has done good service in pointing out the great discrepancies between the amounts of radiating surface obtained by this and other rules, and in comparing the theoretical results so obtained with the amounts of radiating surface which are required, as ascertained by careful tests, to heat a certain room to different degrees of temperature. In the comparative table (No. XIX.) the test results are not given, as the temperatures of the external air and of the radiating pipes were not uniform. We presume that they are those numbered 14 to 20 in Table XXX., page 163, and if this is the case they certainly approximate closely to the theoretical results calculated according to Mr. Jones's new method and given in the first column of the comparative table.

Chapter XVI., which deals with the amount of "radiation or pipe surface" required in buildings of different kinds and for different temperatures, must be read in connexion with Chapter XV., as it is merely a continuation of the same subject. In passing, we may note that Chapter XVI. is a revised reprint of a paper read by Mr. Jones at a meeting of the Institution of Heating and Ventilating Engineers, and, as the author states in the preface, the members of the Institution "showed their appreciation of this work by awarding the first prize (silver medal) for the best paper read at their meetings during the year 1903." The chapter contains additional examples of the discrepant results obtained from some of the best-known formulas, and of the difference between these and the results obtained from tests. The recorded tests cannot be described as exhaustive; there are eight tests of horticultural buildings, one of a dining-room, six of a large office, one of a church, and two of drying-rooms. Of these the six tests of the room described on page 163 as an office, and on page 130 as "a room on the first floor over my offices," are the most interesting. The room had a capacity of 23,500 cubic ft., an exposed wall surface of 1,540 sq. ft. (p. 130, or 1,530 sq. ft. p. 163), and a glass surface of 370 sq. ft. Around this room seven rows of hot-water pipes were fixed, having a total surface of 1,278 sq. ft., and so arranged that any number of rows (from one to seven) could be in use. The first row had a radiating surface of 168 sq. ft., and each of the other rows a surface of 185 sq. ft. With the first row only in operation, the mean temperature of the water being 171° and the external temperature 20°, the temperature in the room was 44°; with two rows (mean temperature of water 167° and external temperature 20°) the internal temperature was 56°; with three rows (water 175°, external temperature 22°) the internal temperature was 68°; with four rows (water 167°, external temperature 16°) the internal temperature was only 70°; with five rows (water 161°, external temperature 30°) the internal temperature was 76°; with six rows (water 161° external temperature 42°) the internal temperature was 87°; with seven rows (water 157°, external temperature 48°) the internal temperature was 96°.

These results are very instructive, but, in order to render them more easy of apprehension, we have worked out the square feet of radiating surface per 1,000 cubic ft. of space in the room, and thus obtain the following figures:—7·1 sq. ft. of radiating surface per 1,000 cubic ft. gave an internal temperature of 44°, when the external was 20° (an increase of 24°), but 15 sq. ft. were required to give an internal temperature of 56° (an increase of 36°), and 23·7 sq. ft. to raise the temperature from 22° external to 68° internal (an increase of 46°). In other words, one unit of pipe showed a difference of 24° between the internal and external temperature, but two units were required to raise the internal temperature 12° higher, and three units (with the water at a higher temperature) to raise it an extra 10°. Four units (30·7 sq. ft. per 1,000 cubic ft.) gave a difference between internal and external temperatures of 54° (namely, 70°—16°); five units (38·6 sq. ft. per 1,000 cubic ft.) a difference of 46° only (namely, 76°—30°); six units (46·5 sq. ft. per 1,000 cubic ft.) a difference of 45° (87°—42°); and seven units (54·3 sq. ft. per 1,000 cubic ft.) a difference of 48° (96°—48°). These tests and those of the two drying-rooms show clearly that every increase in internal temperature requires a much greater increase in the amount of radiating surface, if the other conditions remain constant.

Mr. Jones has not, however, been content to give the results of his tests, but has based on them a new method of calculating the radiating surface required under different conditions. The method is somewhat complicated, and takes into consideration the cubical contents of the room to be heated, the exposed wall surface, and the area of glass, and, in addition to these, the allowance to be made for every increase of internal temperature. By means of elaborate tables and diagrams, the difficulty of calculation has been greatly simplified. Whether the tests on which Mr. Jones's method is based were sufficiently exhaustive can only be proved by experience, but the method seems to us to be without doubt far in advance of any of the formulas now in general use, and to be indeed one which the heating engineer cannot afford to ignore.

We can only briefly indicate the new features in the remaining chapters. In Chapter XVII. some hints are given on the defect known as "short circuiting," which is often found in systems containing a number of radiators. An interesting account of the method adopted for preventing draughts in the town hall at Stourbridge is given in Chapter XX. A new and useful chapter, entitled "Mansions, Villas, or other Buildings," contains valuable information on the methods of connecting radiators. Chapter XXVI. on "Ventilation" also appears for the first time.

The last portion of the volume, as in the second edition, is devoted to hot-water supply, and contains a new chapter in criticism of the ordinary methods in which the heat is obtained from the kitchen range, and also additional matter on the subject of indirect heating by means of double cylinders, or cylinders containing coils of pipes—a method which is particularly advantageous when the water is of such a nature as to leave deposits in the apparatus. Chapters XXXI. to XXXV. are also new, and bear the following titles:—"Water Analyses," "Explosion of Theories said to Have Been the Cause of Boiler Explosions," "Domestic Boiler Explosions," "Experiments with Red-hot Boilers," and "Safety Valves." We have repeatedly pointed out that nearly all boiler explosions are due to the circulation pipes being blocked with ice, and that by far the greater number would

have been prevented if proper safety valves had been fitted to the boilers, and Mr. Jones in these new chapters expresses the same opinion. As a sign of the times, it may be noted that the author is in favour of the metric system, and devotes the final chapter to the subject.

The misprints in the volume are not numerous, but we may point out that "390" on page 130 should be "370," and "1,530" on page 163 should be "1,540." "Verticles" on page 152 is an obvious printer's error, but the word "data" followed by a singular verb occurs so frequently that we are loath to lay all the blame in this case on the much-abused and long-suffering compositor.

We have pleasure in recommending this edition of Mr. Jones's book to architects as well as to heating engineers. It can scarcely fail to command a wide circulation.

NOTES.

British *v.* Metric Weights and Measures.

AT a time when the adoption of the metric system is persistently advocated, interest may certainly be taken in reasonable criticism of such proposals. An organisation has recently been formed, under the style of "The British Weights and Measures Association," with the primary object of combating the metre, and the secondary object of standardising and simplifying British Imperial weights and measures, so as to make them more useful than at present. A small pamphlet published by this association puts the adverse case in exceedingly simple terms, and the arguments raised are based on essentially practical considerations. For instance, it is pointed out that the metre is unsuitable for navigators and for those engaged in the textile industries. Also, that in navigation, in the measurement of shipping, and in the manufacture of cotton woollen, linen, jute, and hemp, British standards are practically universal, even in France and other strongholds of the metric system. Some striking estimates are given of the heavy cost to engineering firms of any radical change in the present Anglo-Saxon units, the outlay being computed at 100,000,000*l.* for British, and 200,000,000*l.* for American manufacturers. These figures may seem absurdly high, but they are supported by the testimony of prominent engineers in both countries, as well as by calculations made on behalf of the Franklin Institute of America. It ought not to be overlooked, however, that metric units are already much used by both British and American engineering firms, and that the change to the metric system would certainly not be made suddenly. In any event it is not likely to be made for many years, and in the meantime nothing but good can result from attempts to simplify the use of British weights and measures, and to abolish the unnecessary and meaningless variations now attending their application to many departments of commerce and industry.

The Thames Barrage.

ADVOCATES of the proposed barrage at Gravesend present glowing accounts of the advantages to be derived from the realisation of the scheme. According to Sir Thomas Brooke-Hitching, who recently delivered an address on the subject, the barrage would give London a clear water free from smell and pure enough for drinking in case of need. Launches, house-boats, and palatial steamers are among the concomitant delights he anticipates, and "London-on-the-Lake" is to become another Windermere or Geneva. Statements of such roseate hue are not altogether wise, and may tend to obscure the real merits of the project. As the width of the Thames will not be increased, its appearance will never resemble that of a lake, and, although the water in the endocked river might probably be rendered purer and clearer, we should never want to use it for drinking purposes. For sanitary reasons houseboats would be distinctly undesirable, but to pleasure launches and steamboat services there could be no objection. One of the most valuable results to be obtained, however, would be the encouragement of commercial activity on the great natural highway. The establishment of permanent high-water level so as to facilitate the conduct of shipping business in the Port of London could alone justify the heavy expenditure involved by the Barrage Scheme. In some respects the proposal seems worthy of most serious consideration, but satisfactory answers must be given to several most important questions before approval could be given, even in principle, to the claims of the promoters.

The Active Sea and Slothful Man.

ALL round the coast object lessons are to be found at the present moment demonstrating the relentless activity of the sea on the one hand, and the negligent sloth of man on the other. We have already commented upon the case of the Dee embankment, which, since our recent "Note" was written, has been almost destroyed and will entirely disappear before long. At one time the expenditure of a few pounds would have saved the embankment if the parties concerned could only have been reasonable. As things now stand the landowners have lost their property and the railway company are committed to an outlay that will probably amount to many thousands of pounds. In the Isle of Wight, again, the authorities at Yarmouth continue to play with danger in the hope of avoiding necessary expenditure. We recently pointed out that there was imminent danger of an incursion by the sea down the Yar valley. Since then a local inquiry has confirmed previous statements as to the serious disaster threatening the western portion of the island, and it is by no means improbable that the next severe south-westerly gale may sweep away the only barrier remaining between the sea and the river Yar. In spite of this urgent situation nothing is being done in the way of protective works, as the local council decline to move unless with the co-operation of other councils and private owners. Sheerness is another place threatened by the sea, from which it is protected merely by sea-walls. Two years ago the defences were damaged on the most exposed part of the foreshore, and although the cost of repair was estimated at less than 200*l.*, the Urban Council declined to sanction the necessary expenditure. About a year afterwards the defences were so much injured by heavy gales that the estimated cost of reconstruction involved no less a sum than 2,000*l.*, which has now to be provided perforce by the dilatory and pennywise authorities. Other examples of the kind could be quoted, but we have said enough to demonstrate the supine folly of some bodies upon whom devolves the defence of the coast line.

Philæ and the Engineers.

A CORRESPONDENT signing "F. R. S." has made a plea in the *Times* against the ruin of Philæ from the proposed further raising of the Nile, and is answered by Sir W. H. Preece in a letter which shows more candidly than usual the typical attitude of the engineering mind towards questions of the preservation of architectural beauty and of monuments of archæology. All the talk against the heightening of the dam is, in Sir W. Preece's view, "sentimental rot." It is not often that we have it put in such plain terms, but that is the general mental attitude of engineers in respect of all accusations that in the course of their schemes they are destroying objects of beauty in nature or in art; and it is well to have this frank and typical confession kept in mind. According to Sir W. Preece, the destruction of the Philæ temples matters nothing because they are only Ptolemaic. If Karnac stood in the way of an engineering enterprise, we have no doubt some argument would be found to prove that Karnac was of no real value.

Poisonous Tunnels.

THOUSANDS of Londoners daily subject themselves to the depressing and noxious atmosphere that flows along the tunnels and through the carriages of deep-level electric railways. Fortunately for them, the period of immersion in this poisonous bath is of short duration, and means of escape occur at frequent intervals. Hence the only immediate effect in those of strong constitution is a temporary reduction of vital energy, which appears to be cheerfully suffered in return for the benefit of rapid transport from place to place. In long railway tunnels where steam locomotives are employed, far greater risks await the adventurous traveller. Only a few days ago five railway employees, including members of a rescue party, lost their lives in the well-known St. Clair tunnel between Canada and the United States, owing to the breakdown of a goods train amid the deadly fumes with which the tunnel is always filled. What would happen if a passenger train were disabled in similar fashion is too terrible for contemplation, but it is well that attention should be called to the grave risks attending railway journeys below the surface of the earth. The St. Clair tunnel is only 2¼ miles long including the approaches, a short distance as compared with some modern European tunnels. Discomfort is experienced in the latter, even during the fairly rapid passage of passenger trains, and the result of any stoppage would be truly disastrous. This consideration alone is

sufficient to negative any lingering feeling in favour of the Channel tunnel, the construction of which has been discussed in France since the happy restoration of cordial relations between the two countries concerned.

Trade Drawbacks.

IN the list of barriers to business enumerated by the President of the South Staffordshire Iron and Steel Institute at Dudley on Saturday last the subject of high railway rates occupied a prominent place. This matter is already engaging the attention of the Government, owing to the persistent complaints made by agriculturists of undue preference in favour of foreign produce. Figures have been quoted in support of their contention which, in view of the Act called forth by a similar agitation a few years back, seem almost incredible. At the Dudley meeting it was stated that the unfair advantages which railway companies offered to our foreign competitors tended more to create unfair competition than was generally known. If this be so, the sooner the Government are put in possession of the facts the better for all the industries concerned. The sidings owners received active parliamentary sympathy this last session, and effected a satisfactory compromise with the railway companies with respect to some of their grievances. Unfortunately for themselves, the South Staffordshire manufacturers labour under the disadvantage of being situated very far from the seaboard, and the incidence of railway carriage may quite conceivably tend to the removal of works from that district, even in the absence of any discrimination in favour of foreign competitors. We were certainly under the impression that "undue preference" had been effectively dealt with by legislation; but such abuses have a tendency to creep in again. If they are found still to exist, the law should be strengthened, for relief in the direction of reductions in rates will otherwise be found difficult, if not impossible, of attainment. Better results may be looked for from a more thorough utilisation of canal transport —a subject we have recently dealt with —for just now every railway manager has "economy" in large letters in the forefront of his programme.

The Mersey Railway.

THE paper on the electrification of the Mersey Railway, by Mr. H. L. Kirker, which has just been published in the *Journal of the Institution of Electrical Engineers*, is of considerab'e interest to engineers at the present time. The whole work of electrifying the line was completed without interrupting the ordinary traffic, and an instantaneous change over from steam to electric working was made. The speed of the trains on the line is increased from fifteen to twenty miles an hour, and the train mileage per week has been increased from 6,000 to 15,000, a three-minutes schedule being maintained all through the day. In order to avoid the loss incident on running lengthy trains during the times when traffic is light, "multiple control" has been adopted. On this system the electric motors are distributed amongst several cars of the train, and electric locomotives are used only on special occasions: Instead of having two controllers, one at each end of the train, to regulate the total current required, a number of smaller controllers are put on several of the motor cars, and they can be operated from several points on the train by means of an auxiliary control system which is worked by a small battery. The change to electricity has effected a very considerable saving in the cost of ventilating the tunnel. With steam the average cost was nearly 5,000*l.* per annum, while with electricity the total cost is less than 400*l.* In electrifying the line great difficulty was experienced in retaining workmen, as the work on the permanent way was of a highly disagreeable nature owing to the vitiated atmosphere. The actual working hours were from 12.30 a.m. to 4.30 a.m., except on Sundays, when the men worked till noon. As the greater part of the cable work was in the ventilation headings, where, in addition to the smoke, there was a seventeen-years accumulation of soot to contend with, the working conditions were very trying. One highly satisfactory feature in connexion with the change over to electric working is that of the 250 men employed in operating the trains over 90 per cent. are old steam employés. This speaks well for the simplicity of electric traction.

The Sandby Bequests.

MR. WILLIAM ARNOLD SANDBY, who died in last May at an advanced age, leaving numerous bequests to the Council of the Royal Academy and to public Art collections in this country, was a nephew of Thomas and Paul Sandby, natives of Nottingham, and foundation members of the Royal Academy. Thomas, the elder brother, was first Professor of Architecture to that body, from 1768 until his death in 1798. Many of his architectural drawings, in water-colour, were then sold, and are preserved in Windsor Castle, the Soane Museum, and the National Collections. When twenty-two years old he was, in 1743, appointed military draughtsman to the staff in Scotland, and, having accompanied in that capacity the Duke of Cumberland in Flanders, was made deputy-ranger of Windsor Forest; during his fifty-two years' tenure of that office he effected many improvements in the park, and laid out the lake of Virginia Water. Paul Sandby, one of the earliest English artists who engraved in aquatint, first found regular employment in the drawing-office at the Tower of London. In 1748, being then twenty-three years of age, he joined the staff for making a survey of the Scottish Highlands. His prints and tinted drawings of scenery in Scotland and Wales, and a set of seventy etchings of the Windsor and Eton country, brought him great reputation. In 1778 he published "The 'Virtuoso's' Museum," a series of 150 engravings by him of views in England and Wales. He was appointed drawing-master to King George III.'s children, and from 1768 to his decease in 1809 was chief instructor of drawing at the Royal Military Academy, Woolwich. Paul Sandby's popular "tinted drawings" were done with a reed-pen, the tints being obtained with thin translucent washes. Mr. W. A. Sandby bequeathes a capital sum of 1,000*l.* to the Royal Academy for an annual "Sandby Gift," in his uncles' memory, to be awarded to an architect and a landscape painter, alternately, or to the families of such artists under certain conditions. His other bequests comprise his MS. copy (to the Academy) of Thomas Sandby's lectures on architecture, autograph letters (to the British Museum) written by his two uncles; and specified examples of their drawings to the Universities of Oxford and Cambridge, the National Gallery of Scotland, the City of London Art Gallery, and the Art Galleries of Manchester, Liverpool, Glasgow, and other provincial cities.

The Autumn Salon at Paris.

THE "Salon d'Automne," which has succeeded in emerging from the basement of the Petit Palais, and secured its footing in the main galleries of the Grand Palais, is to a great extent consecrated (as might have been expected) to the Impressionist School. It may be said at once that good pictures are few, and that good taste (on the part of the public) is somewhat outraged by the fantastic character of many of the works. We may make an exception in regard to M. Carriére, whose exhibits have really fine qualities in spite of his prejudice in favour of a melancholy monochrome colouring and an effacement of outline. M. Besnard on this occasion has abstained from exhibiting, but his wife and daughter have taken part in exhibition, the general arrangement of which is well carried out; but to place in juxtaposition to the room consecrated to the drawings of Puvis de Chavannes such works as those of MM. Odilon, Redon, Cesanne, and Toulouse Lautrec, is but a poor compliment to pay to the memory of a great artist. Among the architectural designs the façades of houses by M. Plumet, and the cottages by M. Sézille, are worth mention. The sculpture is worse than mediocre. In short, this attempt at a third Salon, which no one wanted, may have the healthful result of disgusting the public with the eccentricities which a certain clique of dealers endeavour to force on them, to the prejudice of the true artists.

Mr. C. W. Furse.

THE death, at so early an age, of Mr. C. W. Furse, is a great loss to English art, not only for what he had achieved but perhaps even more for what he might have been expected to achieve. He had always shown original style in his way of treating portraits, but he would seem to have been only feeling his way until the last year or two, when his large picture of "The Return from the Ride" suddenly gave an entirely new idea of the breadth and power of style which were within his grasp; and his beautiful "Diana of the Uplands," in this year's Academy, showed again a new power of movement, and life, and energy, and led all who saw it to feel that henceforth Furse's picture would be among the points of interest in each Academy exhibition. It is sad indeed to think of that joyous vision of life and health, and of its author cut off in the full vigour of his artistic power and promise.

Institute of Oil Painters.

THE Exhibition of the Institute of Oil Painters, though there is a good deal of what may be called respectable mediocrity, includes also a fair proportion of really interesting works, especially among the landscapes. Among these are three beautiful landscapes by the President (Mr. Frank Walton), one large and two small pictures; of these the larger "Wotton Woods" (163) is an admirable example of high finish which does not preclude breadth and atmospheric effect. Mr. Austen Brown's "Returning from the Fields" (171) is a powerful but, one must feel,a forced effect, a piece of stage-lighting, not possible in nature. Mr. Montague Smyth sends a fine landscape, "Fenland" (7), a Hobbema in composition but (fortunately) not in tone and colour. Mr. Wetherbee's "The Hill-top" (78) is a beautiful landscape heightened in expression and effect by the admirably designed figures of the two girls in the foreground—modern, not classic figures, this time. Mr. J. S. Hill's landscapes (120 and 128) are exceptional works with a style, but hardly the best style; it is too crumbly and devoid of atmosphere. Near these are Mr. Withers's powerful but heavy work, "The Mill-Pool" (125), and a beautiful landscape and cattle picture (126) in which Mr. Bertram Priestman seems to have been taking a leaf out of Mr. Arnesby Brown's book. Mr. Hughes-Stanton's large panoramic landscape, "The Mouth of the Exe" (143), is fine in composition and in the effect of space and distance, if a little dull in colour; it suggests a modern de Köning. Mr. Melton Fisher surprises us by a small and very effective landscape study "An Autumn Sunset" (152), curious and unusual in style, but full of feeling. One or two other artists have sprung surprises on us; who, without the catalogue, would ever have put the name of Mr. Robert Little to the interior with the two figures entitled "Mother's Music" (112)? His small picture, "Life on a Farm" (172), displays his qualities of open-air effect and fine sky-painting in more of his usual manner. Among the figure pictures Mr. Kennington has one or two of his careful and learned works, always complete in drawing and composition, but he does not seem to hold his former place in regard to character and expression. Mr. R. Brough exhibits a fine solidly painted portrait of "Lord Torphichen" (42). Mr. Byam Shaw's racing picture, "Sun, Silk, and Sinew" (70) is effective enough in colour, but his horses are not good—as horses. Is Miss Fortescue-Brickdale's "The Little Foot Page" (88), a girl in page's dress, a reminiscence of Elizabeth Browning's poem? It is rather prosaic in conception, considered in that light; the girl's "doublet" is a very fine bit of colour and texture, but it is not one of Miss Brickdale's intellectual successes. Among other things in which figure is the predominant interest may be named Mr. Lavery's portrait of a "Lady in Black" (123); Mr. Sheridan Knowles's "Happy Moments" (197), in which the face of the child on the sofa is a charming bit of work; and Mr. G. W. Joy's "Sea Breezes" (116), the title given to a very *spirituel* sketch of the head of a girl half muffled in a grey cloak.

Garden Ornaments.

A RATHER interesting collection of what were comprised under the general term "Garden Ornaments" was on view early in the week, previous to a sale at Messrs. Robinson and Fisher's rooms, the old Willis's rooms in King-street, St. James's. There was quite an extensive choice of sundials, none of them perhaps of the first order architecturally, but many of them either good, or interesting from their quaintness. There was one described as "a rare declining sun dial on a double-column pedestal," which certainly was a curious affair, but it was a make-up. The desk-like dial bore the date 1784, but was supported on coupled early Gothic caps; the owner had evidently possessed or found this bit of mediæval carving, and had two shafts fitted underneath it, and used it as a pedestal for the XVIIIth century dial. Among the other things were conspicuous a splendid oblong leaden "jardinière," with cast ornaments on it, and a most unusual marble vase, with heads in alto-relief sculptured on it as if resting on a kind of shelf running horizontally round the middle of the bowl. There were to be seen also two fine pairs of eagles for the finials of gate-piers; one pair with the heads turned—"regardant," as they say in heraldry; the other pair standing on stone balls and holding iron rings in their beaks. Above the baize wall lining of the show-room the tops of fluted pilasters, and wreath ornaments, and panels of dancing figures, reminded one that this was once "Almack's." What a contrast of associations!

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119 Foolish Persons.

THE Instructions for the competition for the proposed Wallasey District Offices (Cheshire) specified plans on the scale of $\frac{1}{8}$ in. to a foot; a working drawing scale. The site is a very extensive one, and the plans to that scale would come to very large drawings, probably covering sheets of "antiquarian" paper. One of the architects who had sent for the Instructions pointed out the unfairness of demanding drawings on such a scale for the chances of a competition, and was bluntly told that of the 120 architects who had applied for the Instructions he was the only one who had raised any objection to the scale. In that case we know of 119 foolish persons. What is the use of the efforts which the Competitions Committee of the Institute is continually making, which enlightened "assessors" are making, which we are frequently making in these columns to combat these unfair demands for large-scale drawings in competitions, when here are all these competing architects ready to give way to these unfair and totally unnecessary demands on their labour, without even a protest? If architects are so foolish as to do this, it is their own fault if they are victimised and tyrannised over by competition committees.

NEW CHURCH, WATFORD.—The new St. Paul's Church in Bushey Hall-road was recently opened. The building has been erected at a total cost of about 1,614*l.*, from the designs of Mr. Austin Durst, architect. Accommodation is provided for 230 people. The contractors for the work were Messrs. G. and J. Waterman, whose tender amounted to 1,194*l.*

THE ARCHITECTURAL ASSOCIATION.

THE ordinary fortnightly meeting of the Architectural Association was held on Friday last at the new premises, 18, Tufton-street, under the chairmanship of the President, Mr. E. Guy Dawber.

The minutes of the previous meeting having been read and confirmed, the following gentlemen were elected as members:—Messrs. G. St. J. Makin, F. W. Troup, A. H. Fagg, G. W. Malcolm, H. C. Emery, D. M. Wilson, A. F. Poole, T. Gibbon, S. W. Neighbour, W. G. Green, H. W. Wakeman, G. A. J. Hart, R. J. Buck, E. C. M. O'Brien, W. B. Hackett, C. Cooke-Yarborough, G. W. Horsfield, E. F. Bothwell, H. J. Fletcher, P. E. Holland, W. H. H. Cooke, W. Craven Rhodes, F. J. Hill, C. Q. May, L. Mansfield, N. W. Hadwen, L. E. Marsh, V. G. Santo, F. P. Skipwit, W. Albert, D. E. Oram, A. H. Brownrigg, O. A. Bloxam, E. C. W. Wilmott, W. W. Caithness, P. Hemy, W. W. Roberts, A. P. Dowglass, G. Law, A. L. Snow, R. P. Bruce, B. A. Ross, F. A. Vernon, C. R. Bawden, F. Woodward, C. F. Pember, B. H. Lodge, H. E. King, and A. N. Peckham.

Annual Report and Balance-Sheet.

Mr. Cole A. Adams moved the adoption of the Committee's report and balance-sheet for the session 1903-4, and said it was very satisfactory and marked another epoch in the history of the Association. The new premises showed a debt of 4,000*l.*, and it ought to be the object of everyone of them in every way possible—no matter how small the subscription—to wipe out the deficit. The increase in the day school was very satisfactory, and he trusted it would go on increasing. The report mentioned that Mr. H. Tanner, sen., had been knighted, which was gratifying to the profession generally, and he hoped that other men not in official positions would also gain that distinction.

Mr. Francis Hooper, Hon. Treasurer, in seconding the motion, said he desired to address himself exclusively to the accounts, kept by their invaluable Secretary, Mr. Driver, with his loyal staff, and audited by Messrs. Saffery, Sons, and Co., chartered accountants, which had been published in the Brown Book now in their hands. Their ordinary general working expenses had varied but little from those of preceding years, but, as was to be expected, the acquisition of the new premises, though upon conditions generally favourable, had involved exceptional outlay, which included their rent at both Great Marlborough-street and Tufton-street, from the date of the liquidation of the museum accounts in 1903, during the time occupied by the alteration of the latter premises to suit their requirements, and also the payment for dilapidations under the covenants of their lease of the old premises. In respect to this, their best thanks were due to Mr. E. Greenop, for his invaluable services in negotiating the settlement on their behalf. Coupled with this was the pension payable to the late curator under agreement with the former trustees of the museum. After prolonged negotiations, the Committee had surrendered the two leases for unequal periods under which the premises in Tufton-street were held, and had secured from the Ecclesiastical Commissioners a new lease for a term of which 998 years was unexpired. Turning to the income account, members' subscriptions and entrance-fees were somewhat greater than before, and that night they had gratification in nominating for election upwards of seventy-eight new members. The R.I.B.A. Council had again generously granted 100*l.* towards the maintenance of the evening school, which, owing to fluctuations that seemed almost unavoidable, was in this year particularly welcome. Special subscriptions to the Royal Architectural Museum from its old supporters amounted to 46*l.*, and this they most gratefully acknowledged, and hoped not only to maintain, but to augment. Their Travelling Studentship and Scholarship Fund remained as before, but during the year the Committee received the pleasing announcement that, under the will of the late Mr. H. Saxon Snell, a sum was to be placed at its disposal to form a scholarship for the furtherance of the study of hospital construction and poor law buildings. The Library Fund continued to benefit by the generosity and admirable foresight of Mr. Leonard Stokes, whose loan of a surveying level some years ago produced a useful revenue for the purchase of books from members who hired it. The attention of members should be

again drawn to the publication of the Sketch Book, which represented the work of some of the finest architectural draughtsmen of the day, and, he believed, needed only to be better known to secure much wider support. In this year, however, by far the most important item concerned their capital account in respect of the new premises which they now occupied. Very generous donations had been made by members and friends, for which the Committee was most grateful. The Council of the Institute of Architects had most liberally voted 500*l.*, and several manufacturers and merchants had contributed in kind, the total representing 5,633*l.* in all, but their indebtedness to the building contractors still amounted to some 4,000*l.*, and a further sum of about 1,000*l.* was requisite to complete the reinstatement of the museum and efficiently equip the classrooms, reading-room, and library. Towards this 1,000*l.* had been promised by a valued friend conditionally upon the balance being secured during this session, and Mr. Aston Webb, R.A., another tried friend, had offered 50*l.*, in addition to his former donation, upon similar terms. The Architectural Association was doing work for its members and students which was increasingly recognised and appreciated, and, in addition to this, it was pledged to maintain the Royal Architectural Museum for the public benefit. The Committee, therefore, confidently hoped that a generous response would follow the publication of a statement of the present financial circumstances from that ever-widening section of the community which was interested in the advancement of art generally, and of national architecture in particular.

The report and balance-sheet was then adopted.

The President announced the following further donations to the New Premises Fund:—Messrs. W. A. Aickman, 5*l.* 5s.; A. S. Gover, 2*l.* 12s. 6d.; T. L. Dale, 1*l.* 1s.; and T. R. Hooper, 1*l.* 1s.

Mr. L. Ambler, Hon. Sec., announced that the Conversazione would be held on Thursday, October 27, at 8 p.m., at 18, Tufton-street.

Photography as Applied to Architecture.

Mr. E. Dockree then read the following paper:—

If I commence my paper this evening with a few remarks on the ethics of "Photography as Applied to Architecture," or, in other words, architectural photography, I must at once disclaim any intention of raising that wearisome and unprofitable controversy over the respective merits of sketching and photography as a means of depicting buildings. I recognise that very exhaustive claims have been made on both sides—claims not supported by any substantial basis of fact; and while my personal sympathies naturally tend towards work with a camera, I am quite willing to grant that the use of the pencil by the architect and student is a very necessary and proper thing.

But architectural photography has its field. The late John Ruskin, no enthusiast concerning photography in general, said "it was the foremost means of translation or reproduction in a graphic form of architecture." I do not affect a belief that by this utterance the great art critic excluded all other methods of depiction; his own exquisite drawings of architecture would at once dispel such a claim. But I do believe that by this utterance he recognised the supreme claim of the architectural photograph—its impersonality. A drawing must necessarily be tinged with the individuality and perception, or want of perception, of its author; in short, you do not receive an impression of the building through your own eyes, but through the eyes of the artist—nay, it is but an impression of his impression. So that, whatever pleasure you derive from the drawing as a drawing, you do not necessarily receive from it the impression of the building that would result from a sight of it in the substance. Some medium is therefore required for affording an impersonal depiction of a building from which each beholder can draw his own deductions and impressions. Such an impersonal basis is afforded by the photograph, which I claim is the only effectual means for the exhibition of architecture; and by exhibition I not only mean a public display of architectural views, but also their publication in books and magazines, or any other method intended to appeal directly to the criticism and judgment of the individual. The first case is even more important than the second, because if ever an unpersonal basis is needed, it is required by a judge who has to decide the merits, not of drawings or photographs, but the buildings depicted in them. That I am not alone in my contention is shown by the efforts that have been and are still being made by some of the leading architects to obtain a revision of the Royal Academy rules with regard to architectural exhibits; a revision that would permit architects to show their work by means of photographs, geometrical drawings and models, as well as, or instead of, perspective drawings, to which they are at present practically restricted.

My claim for the photograph as the best means of exhibiting a building will doubtless be met by two objections:—

(1) That the photographs can be "faked."
(2) That buildings seen in photographs are frequently distorted and are not truly represented.

Both these objections must be admitted; in regard to the first, I might rest content to say, so can drawings. One has only to study perspectives at the Royal Academy for this fact to be self-evident. But if absolutely sharp, clear detail be insisted upon in a photograph, it will be exceedingly difficult, if not impossible, to fake it without detection. Only fuzziness or impressionism will disguise the efforts of manipulation. And architectural photographs in general cannot be too sharp. In regard to the second objection, the fault lies entirely with the operator; if you see a distorted building or one in impossible perspective, blame not the science but the photographer.

For the benefit of architects employing professional photographers, I should mention that many of the monstrosities in architectural photography that one sees are due entirely to the architect, whose orders the photographer is naturally obliged to carry out, however much they go against his better judgment. The most common causes of failure are:—

(1) The architect desires to get too much in one plate; he wants "to look over his head" or "round a corner"—in short, tries to achieve the impossible—in which amiable endeavour the photographer collaborates. Occasionally, for a special purpose, it may be necessary to take a somewhat distorted view. For instance, one of the photographs of Westminster Cathedral which is hung on the wall to-night is a very sharp perspective of the campanile from the roof of the nave. This photograph, which took me three hours to focus and get into position, was specially asked for by Professor Lethaby, who selected all the points of view. In general, the photographer should resist a request for a view he knows will appear distorted.

(2) The operator receives instructions to do "the best he can" (a favourite form of request), and with some operators the best does not amount to much. In this case the photographer goes blindly to work, never pointing out drawbacks or defects (from a photographic standpoint) in the views suggested or offering a workable alternative.

I am tempted to add a third reason—a want of knowledge on the part of the operator of either the science of optics or the laws of perspective, or both.

I do not wish to pose as an authority on architecture; there are too many already; but in more than one instance I have succeeded in bringing the architect round to a point of view widely differing from his original idea, although still retaining the same angle of the subject that he required to be taken.

Some subjects are quite impossible to render in a pleasing way, and, unless they are required for litigation purposes, I strongly urge that they be left alone.

Concerning size, the larger the photograph of an architectural subject can be made, the better in every respect: the details and the proportions of the structure are shown to a greater advantage. A small picture may be a gem of photography in its way, but you instinctively feel you would like to see it done larger. Of course, you can enlarge by means of one of various apparatus on the market, but why make two bites at a cherry? The resulting picture lacks that "quality" and "vim" only to be obtained by working direct. An enlarged negative is another alternative, but that requires a skill and power of manipulation far beyond the average amateur, who only requires one or two prints of the subject he is interested in.

Again, small plates are "small" in price and tend to carelessness and slipshod work; whereas a large plate and its after manipulations compel you to walk round and study your subject—consider every standpoint—the final one being selected only after mature deliberation.

I would like, while still speaking generally, to say a word about artificial light. For architectural work artificial light should never be resorted to if it can be avoided. Though an interior may appear absolutely dark to the naked eye, there are always rays sufficient to act upon a sensitive plate if time be given. Thus, my view of the Chester crypt had to be focussed on a torch, consisting of a newspaper rolled up, lighted and held a certain distance in front of the camera. The plate was exposed for five hours, and a slide of the result obtained you will see later. Such prolonged exposures are not always possible, and one is frequently forced to employ some sort of artificial aid. Though I have never employed it, I believe acetylene gaslight is the best for photographic purposes, as the spectrum of this light most closely approximates to that of the sun. I have invariably used electric arc lamps when photographing the auditoriums of theatres and other dark interiors. In the case of All Hallows Church, Lombard-street, the very dark interior of which I photographed in foggy February last year, the building was not wired for electric light and electric arcs could not be utilised. I therefore employed six lime boxes, using the oxy-hydrogen light, the gas being contained in portable cylinders. The resulting photographs are shown on the walls this evening. One light I warn you not to use for architectural purposes, and that is the one most commonly resorted to—flash-light magnesium. Its use results in a white glare over the objects nearest to the camera and the elimination of detail in the background, so that delicate undercut carving looks as flat and formless as a stencil pattern on a wall.

Unfailing patience and effort are required to obtain success in architectural photography. One must be prepared to work at it at all hours of the day and night. I have secured excellent negatives by exposing plates in the subdued light between 3 a.m. and 7 a.m. But as the fascination of the work gets a firmer hold of the worker, so the various difficulties are overcome and in the end practically disappear, the intervening stages serving to encourage the earnest enthusiast. There are obstacles to be overcome undoubtedly, but none of such magnitude as cannot be surmounted by care and application.

Apparatus.

In dealing with my remarks on photographic apparatus and photographic processes, which I include in this paper for the benefit of those of you who are or intend to become architectural photographers, I have endeavoured to eliminate as far as possible technicalities or technical terms, hoping that my lay hearers may also understand and join in the discussion which I hope will arise.

The Camera.

Bearing in mind my remarks as to size, I would recommend nothing less than a whole plate or a 10 by 8; personally, I use a 12 by 10, and would a 15 by 12 if I could get about with it and all its appurtenances in a comfortable manner. The camera should possess double extension; that is, the "front" and "back" should be capable of being adjusted by means of a pinion and rack-work, the bellows slightly tapering; and the "front" carrying the lens should have a "rising movement" and, better still, a "sliding movement" in addition. All up-to-date cameras have a "swing-back" capable of two movements, "to" and "from" the lens, and a "reversing back" to carry the dark slide so that oblong and upright pictures can be obtained. Some workers find fault with the "turntable"; they say that "focussing" is a difficulty in a dark interior—what light there is coming up through the same from the ground or floor and detracting from the visibility of the image on the "focussing screen." This may be so, but personally I have found no inconvenience of any moment up to the present.

To my mind the turntable has advantages over the solid base board; it reduces the weight of the camera, it facilitates your movements in finding the desired view, and gives rigidity to the whole apparatus, the latter a most important feature when working with lenses of long foci and in exposed positions. The tripod stand, or tripod used with the turntable,

should be folding, with a sliding leg—two or three-fold, if of the right weight, is immaterial; the camera and tripod when set up for use should not exceed 5 ft. 6 in. to 5 ft. 10 in. in height, this being an average sight-line. A slow moving spirit-level, circular in shape, should be fixed on the "base board" of the camera just at the side of the front; on the front itself at the top of the side a "plumb index" should be placed, and another one on the side of the "swing-back." These three working together accurately place beyond dispute the absolute verticality of the resulting photograph.

Lenses.

The next thing to be considered, and certainly the most important one concerning architecture, is the lens or lenses. One lens will not do everything required of it; and, before deciding what to get, I would strongly urge the enthusiast to consult someone well versed in the matter, and, if the pocket will allow, to purchase the best make possible. Then, should your results be not satisfactory, blame yourself and not the lens. I hold no retainer, so cannot advertise, but whatever make is selected let it be a lens giving no wider angle than 65° for an interior subject, whereas 60° to 65° is a very pleasing range for exteriors of buildings.

If I quote "focal lengths" of lenses it will possibly only tend to confuse, so I will merely state that lenses for architectural work must be of the rectilinear type and possess great covering power and marginal definition; those of the genuine "anastigmatic" series are absolutely the finest procurable for the purpose.

I am afraid I must depart from my original intention to avoid "technical terms," but I have no alternative in giving the following particulars. Where the purse will allow, I strongly recommend the earnest worker to procure a "battery" of lenses for his use; for instance, for a whole-plate camera, a 6½-in., 9-in., and 12-in. focal lengths; for a 10 by 8 camera, an 8-in., 11-in. and 14-in. focal lengths; and for a 12 by 10 camera, a 10-in., 13-in., and 16-in. focal lengths. And to the last-named I would add an 8½-in. lens.

Focussing.

The apparatus complete, the first operation after the selection of your view is the "focussing." The screen upon which this is effected should be ruled into small squares, say, of an inch; this will facilitate the worker in composing his picture. In "focussing" get your subject as sharp as you can, roughly so at first; see your vertical lines are vertical, and not, as one sometimes sees, converging to meet at some point. Your "uprights" not being true, the camera must be generally "levelled" and the "swing-back" manipulated until the said lines are vertical, the levels all working true to each other; your picture should then be dead "upright." Now re-focus, fixing upon some object midway between the camera and the middle of your subject; note the appearance of the same at the top, bottom, and sides of your screen, using the lens's stops to bring the whole view into general sharpness—and in architectural work I have already said it cannot be too sharp.

Exposure.

The knowledge of the exposure to be given is only gained by experience; there is no fixed rule, subjects, light, and shade varying to an enormous degree. But bear this in mind—always give plenty; look after the shadows, the "high lights" will look after themselves. Better "over-exposure" than "under-exposure"; the former can be modified in development, but no amount of development will give detail which through "under-exposure" is not in the plate. Bear in mind that each consecutive stop requires twice as much exposure as the one immediately preceding it.

Plates.

Those having a medium rapidity will be found the most serviceable, satisfactory, and easy to work. Some workers like one make of plate, others prefer another; personally, I think the Imperial Company's or Elliott's Barnet give all that is required of them; but every plate used must be "backed." The difference in the resulting picture obtained from a "backed" and an "unbacked plate" is most marked; in fact, in some cases, especially where windows assert themselves in an interior, a "backed" plate is an absolute necessity, otherwise "halation," the bugbear of photography, will be so evident as to quite mar the picture, though everything else is quite satisfactory.

Developer.

One composed of pyro, in combination with potash or soda as the accelerator, is, to my idea, the best for the class of work under consideration. It yields, if properly adjusted in its components, a negative soft but vigorous, the class best suited for printing in either "silver" or "platinum." In development the watch-words should be "Detail first, density afterwards," not the reverse. To obtain the correct gradation, keep your pyro down to a minimum to start with; it can easily be increased as development proceeds.

All detail out and the desired stage of density reached, rinse the negative well and fix in the usual manner—say, for ten to fifteen minutes—in hypo 1 oz. to each 4 oz. of water; remove, well wash under running water for forty minutes to an hour, drain, and stand to dry in a place free from dust and draught.

The negative now obtained, when dried should be carefully examined, and the various defects, such as pin-holes, etc., remedied, and the shadows, if too pronounced, should be strengthened by one of many devices, such as papering, etc., on the glass side.

Prints.

I have no doubt that the numerous printing processes are known to you; each one has his own particular idea in that direction. But a note on prints intended for reproduction by the press may not be amiss.

A print to give the finest block for reproduction is the "silver print." By that I mean that done on one of the various P.O.P. papers and toned with gold. I prefer that "toning" which includes the "sulphocyanide of ammonium"; the range of tones and the latitude it gives is excellent. The "process worker"—by that I mean the "block maker"—likes a good, plucky "blue-black" print full of "vim" and "contrast"; it yields a block far superior to any other class of print.

In bad or dull weather one of the numerous "gas-light papers" must be employed; no toning is required, the image being developed by one of the various "Metol" formulæ.

For framing and keeping for show purposes there is no process equal to the "carbon" or "platinum," but suitable negatives are required to give the finest results—any class of negative will not do; for carbon a strong, plucky negative, and for platinum a soft but vigorous one.

My paper is now ended. I am aware that on many points I have only been able to touch briefly; but I shall be most happy to answer any questions or explain any matters arising out of the subject. I will now submit for your inspection some of my slides from negatives by Mr. Ashton and myself. They comprise views of buildings in England, Italy, France, etc., and will, I hope, show what can be done in the way of architectural photography without either "faking" or "distortion."

[At the conclusion of his paper Mr. Dockree exhibited 166 slides, selected out of over 3,000 made by him from negatives taken by himself and Mr. Ashton. They illustrated some of the possibilities of architectural photography and included also sculpture and metal-work subjects. The views were splendid examples of the photographer's art, many of them, as explained by Mr. Dockree, being taken under very difficult circumstances.]

Mr. A. C. Bulmer Booth proposed a hearty vote of thanks to Mr. Dockree for the very interesting paper, and also for the splendid photographs. What struck one so very much was the wonderful way in which the different substances of the object photographed were rendered. One could see at once whether it was brasswork, stone, or bronze, and so on in every case; but beyond that they could see the texture and the material in the way of marbles. The views did not want much explanation, for one saw at once what the substance photographed was. Perhaps what were especially interesting to them were the photographs of interiors. Mr. Dockree had spoken of the photographing of interiors where there was little or no light, and he had an instance of that early this year, when a friend of his and a member of the Association—Mr. Hemmings, who was a very enthusiastic photographer—went to Abbots Langley. The church there was very dark, and, in addition, it was a dull day; but Mr. Hemmings wanted to photograph a Jacobean pulpit. They got there about a quarter to one and obtained the keys of the church, and, having set up the camera, left it whilst they went to lunch. They returned in an hour and a quarter, but the light was so bad that they could see none of the detail of the pulpit with the naked eye. When, however, the photograph was developed the amount of detail to be seen was wonderful; one would have supposed that the interior of the church was flooded with sunlight. He was not sufficiently acquainted with the art of photography to know how that came about, but certainly the print gave the appearance of sunlight, for, instead of having a dull interior almost black, it appeared to be almost in sunlight.

Mr. Dockree: That shows its truthfulness. That opens up another question as to whether photography can lie. It does not.

Mr. Booth said it was certainly a revelation to him to see what could be done in the way of the details of an object in a dark place being reproduced by the camera.

Mr. C. H. Freeman, in seconding the motion, said that one remarkable thing about Mr. Dockree's work was the amount of detail he managed to get in the shadows. Mr. Dockree told them to do so, but he really did not give much information as to how it was done, and that was the sort of thing many of them would like to know. Another thing which struck him was the reference to long exposures, which was a thing many people seem to be very much afraid of. He himself had never given such a long exposure as five hours, but he had given an hour. He had been photographing interiors when people had asked him how long an exposure he was giving, and when he told them about an hour they seemed quite alarmed at the idea of giving more than about ten minutes' exposure. He remembered seeing some photographs taken by Mr. Sandell, who said he had left the camera up all day and night, and there was no trace of over-exposure on his plates. A little while ago these plates seemed to be recommended a great deal for architectural work, but Mr. Dockree had not mentioned them in the course of his paper.

Mr. Ambler read a letter from Mr. S. P. Bolas, who had been invited to attend the meeting. Mr. Bolas said he had read an advanced proof of Mr. Dockree's paper, and sent a number of photographs of Westminster Abbey for inspection. He apologised for his inability, through illness, to be present, and said the whole of the views of the Abbey were made from points selected by his firm; but the main difficulty was the general view, which took them three-quarters of an hour from the time they arrived in the street and got to the top of the roof and back again. The detail of the campanile was a telephoto, and the interiors were troublesome and tedious. The building was dark, but even then the longest exposure did not exceed one and a half hours. Again, they found that the most handy flashlight was magnesium, but the lamps one bought in the shops were absolutely useless. The one they used was made to their own design, and was got out of a solid block of metal. In light interiors, etc., they frequently only required a puff or two to illuminate dark corners and get their correct shadows. As regarded the focal length of the lens, everyone knew the 18° was most satisfactory to use, but ninety-nine times in a hundred one had to use a 9°, which covered an angle of about 120°.

The Chairman said he was sure they had all had a most enjoyable evening, and on the wings of his camera Mr. Dockree had taken them to some of the most beautiful places in Europe. They could heartily congratulate him on the excellent series of modern work that he had shown that night. Apart from anything else, he thought the clearness and brilliancy of the detail and the selection of the points of view in all of them were worthy of high commendation. If this was the result of architects telling Mr. Dockree "to do the best" he could, they had not very much to complain about. Mr. Dockree had touched upon a point which was a very debateable one—whether we should illustrate our work by photographs or drawings. He thought that executed work was better shown by photographs than by drawings. Of course, there was no comparison between the two—they were so absolutely distinct—and Mr. Dockree was very wise in not pitting one against the other, as so many people did. From his own personal point of view, he must admit that a great part of the paper was beyond him. It was an excellent paper for those who took

photographs, but, so far as the technical part was concerned, he was rather lost. He felt that there was no doubt that the perfection which photography had reached in the last ten or twenty years, and to the way in which architectural subjects had been treated, was to be attributed in no small degree the interest which the public took nowadays in architecture. The illustrated papers gave photographs of country and town houses in a way that fifteen or twenty years ago was absolutely unheard of, and to the professional photographers a debt of gratitude was owing for the way they had popularised architecture amongst the people. He had never seen a better collection of lantern slides than those shown, and the way in which absolutely black interiors had come out was simply marvellous. With the vote of thanks he would also couple the name of Mr. Ashton, who had worked the lantern.

The motion having been carried,

Mr. Dockree, in reply, said the question was whether he had succeeded in persuading them of the impersonality of photograph? That was the point—that it could not be faked, or, if it was faked, it was open to detection. That was really the purport of his paper—as to whether photography was impersonal. Nobody was more sorry than himself that Mr. Bolas was not present, for there was no lens made which would take 120°. He was asked how they got the details, and he could only say that it all came back to the one point—detail first, density afterwards. As to the question of why the pulpit came out, it was one of those things they could not understand. The plate itself was more sensitive than the eye; if they could get something to focus and sufficient exposure, and proper development, they would find something there. He was disappointed that the paper had not produced some discussion. He came down there to learn something about architecture and to teach something about photography, but he was afraid they had both failed. If he could help anyone out of a difficulty, he would be glad to.

A member remarked that, whilst the slides were being shown, a gentleman asked how the colouring was produced, and Mr. Dockree did not answer.

Mr. Dockree said that had nothing to do with the negative. He had not come to teach slide work, but some day, when the Association had a strong body of photographers, and wanted to learn something about slide work, then he would be glad to touch upon that.

The Chairman announced that the next meeting would be held on November 11, when Mr. Henman would read a paper on "Ventilation."

THE ARCHITECTURAL ASSOCIATION:

VISIT TO CHARING CROSS HOSPITAL.

AN unusual opportunity of viewing an important London hospital induced the Committee of the Architectural Association to arrange a special Saturday afternoon visit on the 15th inst., and a very large attendance of members, combined with what proved to be a deeply interesting subject, more than justified the experiment.

Charing Cross Hospital, like kindred Metropolitan institutions, has found it necessary to enlarge its accommodation to cope with increasing demands; but instead of removing to a more spacious site, the Governors elected to acquire surrounding property, in order to extend existing premises, and it was of these recently completed additions that an inspection was made, under the guidance of the architect, Mr. A. Saxon Snell. In an early stage of the new work we gave a historical "note" of the site,* but, in order to convey a more comprehensive idea of the completed scheme, it may be interesting to recall that the hospital now occupies almost the whole of the triangular plot bordered by Chandos-street, Agar-street, and King William-street. Amongst many buildings cleared away was Toole's Theatre, latterly the home of the Beef Steak Club, at which time the hospital stood principally upon the Agar-street front. The new buildings on the Chandos-street, or north, front chiefly consist of a large nurses' home, whilst the old and new blocks fronting the remaining two thoroughfares, comprise wards, administrative and other hospital departments. The central part of the site is occupied by a large tower, containing the main staircase, automatic electric lifts, chimney shaft, and isolation wards. Cross ventilated bridges give access to the respective floors of the surrounding blocks, which are again connected with one another by iron stairs and landings at the ends of the wards, thus producing a ready means of escape from fire.

The greater part of the basement accommodates the out-patients' department, conveniently arranged and satisfactorily lighted. More accident cases are treated here than at any other London hospital, and ample provision is now made for their reception and rapid disposal. The casualty department is entered at the south-east angle facing Strand, and is so schemed that a cab can draw up at the doors of two top-lighted theatres, which are in close touch with the surgeons' consulting rooms, and with the central stairs and lifts. Baths of various kinds are also found on this floor, the practical details of which are well considered.

The ground floor, generally speaking, consists of staff quarters and administrative departments. The next three floors in the new, and four stories in the old, building contain wards which are planned very much in the usual way, with scullery and small ward in the middle and sanitary annexes at each end. The maximum number of beds is 265, of which 100 are located in the extension. On the fourth floor of the new building the operating and lecture theatres, clinical laboratory and X-ray rooms are well placed. The fittings throughout these, and, indeed, in all departments, are of teak, very suitably designed. In the operating theatre the students are located in a balcony surrounding the working table, and yet are in closer touch with the actual operation, leaving the floor space clear for surgeons and assistants. This is the suggestion of Mr. Stanley Boyd, one of the chief surgeons of the institution.

In the matter of details very great thought and attention has been given, and, in many instances, departure made from the usual forms of construction. Foremost of these is the ward floors, where a boarded finish is dispensed with, and a linoleum laid direct upon the concrete. The windows on the King William-street front are glazed with an opaque material, set in a series of louvred casements, controlled and regulated by a simple mechanical contrivance, specially devised by the architect to prevent overlooking from the windows on the opposite side of the street. The ventilation, although occasionally in the nature of experiment, is on simple, natural lines; no mechanical system is provided.

It was generally observed that, considering the drawbacks of such a site, the architect has produced a very successful scheme, making full use of the limited area at disposal. The general information which he willingly gave to the members, and the opportunity of studying the hospital buildings, were much appreciated.

* November 9, 1901.

MANCHESTER ARCHITECTURAL SOCIETY.

ON Thursday, the 13th inst., Mr. J. W. Beaumont, the President of the Manchester Architectural Society, delivered an address at the opening of the present session. A considerable portion of the address was occupied with points of local interest; but we print those portions of the address which referred to subjects of more general interest. In the course of his address, referring to the possibility of interesting persons outside the profession, Mr. Beaumont said:—

"Many advantages are offered, as I said in my address last year, to members joining our Society, but I think it is well worth considering whether we could not make our Society still more useful by extending its advantages and trying to interest those who although not members of a profession, yet take some interest in our art. The more the public are induced to take some interest in architecture, the better, I am convinced, it will be for our profession, and I do not see why we should not invite men outside our members to attend our meetings when papers are read. Judging by the success which has attended Professor Capper's excellent public lectures on architecture at Owens College, I feel sure that if a really interesting series of papers could be arranged for our sessional meetings, or we could organise a series of lectures on architecture similar to the 'Addresses to Craftsmen' being given by Mr. Glazier at the Municipal School of Art, and people invited to attend them, we should be doing a useful work. It is to societies like ours that the public should be led to look for instruction in architecture and the allied arts, especially in provincial towns where facilities for the study of architecture are not easily obtained elsewhere; and if we could offer them some means for the study of these arts I firmly believe these means would be taken advantage of, and the public would be led to a better appreciation of our profession. It would be a great public benefit if, in all towns possessing an art gallery, the municipal authorities would devote a portion of it to the formation of an architectural gallery or museum, where, by means of casts and drawings and reproductions of examples of the various styles of architecture, the history of architecture might be studied from its earliest days. In such a museum also there might be a collection of building materials, where the art student and workman would be able to study the characters and methods of use of such materials, and more especially specimens of those materials the most suitable for use in the locality. In it should also be preserved, by means of drawings and models, a record of those ancient buildings which in so many towns have in the course of events to be cleared away to make room for town improvements and extensions.

"There are very few places outside London where the art student has facilities for studying his art from actual examples, and it is only a few who can spare the time and expense of frequent visits to London for this purpose. It is only by enlisting the sympathies of the public in matters of art that we can expect to make such a museum successful, and it should be one of the duties of our society to make the attempt. I feel sure that in making such an attempt we should have the sympathy and hearty co-operation of the members of the Committee of the Municipal School of Art. This Committee have taken an excellent step in founding a collection of architectural subjects at the School of Art in Cavendish-street, but to be of better use to the public it should be on a larger scale and housed in a more central position.

"In Dublin there is an excellent collection in the Art Gallery of examples illustrative not only of early Irish architecture, but also of many of the finest buildings in Europe.

"It is to be hoped that when a new art gallery is built in Manchester, our Corporation will be able to provide for an architectural gallery and museum. At the right time it will be the duty of our Society to take the matter up and to persuade the authorities of the importance of carrying it out.

"A subject which has again received a very considerable amount of attention from our profession during the last twelve months is one on which I spoke pretty fully in my opening address last year. I refer to the question of registration of architects, or, I would rather call it, the compulsory qualification of architects.

"The question of the meaning of the term 'qualified architect' was brought to my notice some few months ago. A young architect, not practising in Manchester, came to tell me that he was applying for a public appointment, and that one of the conditions of the appointment was that the applicant should be a 'fully qualified architect,' and he wished to consult me as to what that meant. I told him there was no such legally recognised term. I suppose it meant that he must be a member of the Royal Institute of British Architects; but this does certainly not confer upon him any legal right to call himself a qualified architect; if it did it would exclude a very large number of men who occupy the highest positions in our profession, but who are not members of the Institute.

"I frankly confess that my feeling in the matter is that any man before he is allowed to call himself a qualified architect should have passed compulsory examinations which would show that he is entitled to use the term, and that no architect should be eligible for a public appointment until he is duly qualified. . . .

"During the past year alterations have been made in our Articles of Association with a view to facilitating the alliance of neighbouring societies of architects to our own society, and under these new provisions the Blackpool and Fylde Architectural Association have become allied to our society. This is a most important event in our history, and it is to be hoped that it will lead to further alliances. The more architects bind themselves together for mutual

support and assistance, the stronger they will become as a profession. There must be a large number of architects practising in towns comprised in our district who would for many reasons find it beneficial to belong to a society such as ours. I feel convinced that before many years are passed Manchester will become a very important centre for the education of architectural students, and that the training which will be given at the Manchester School of Architecture will draw students from all parts of the district. It is most encouraging to learn that a very fair number of students have entered this session for the degree course as well as for the ordinary classes. There is no doubt in my mind that, for a student who can afford it, the best course he can take is to enter for the degree course ; this will take him three years after he has passed his matriculation. He should be articled from the commencement to some practising architect, and during the time he is studying at the university he should pass all his spare time in the office. The first year his time will be taken up very largely with his classes, but during the second and third years he will have some time to spend in the office ; if he is articled for four years, his last year will be spent entirely in the office. Such a course as this will be an excellent training, combining as it will both theoretical and practical teaching. At the end of his four years' course, he will be able to take his B.A. degree, and will be exempted from passing the Intermediate examinations of the R.I.B.A. The range of studies through which he will have passed will further help him very considerably in preparing for the final examination of the R.I.B.A.

"When one sees the enormous advantages in the matter of education which are now open to architectural students, one cannot help an envious feeling and a strong feeling of regret that such advantages were not to be obtained in one's younger days. It is a perfect treat to read through the curricula of the Architectural Association and to see the variety of subjects in which instruction is given—perspective, plane and solid geometry, Greek and Roman architecture and classic ornament, principles of building, construction, mediæval and renaissance architecture, elementary physics as applicable to building, drawing and design, nature and application of materials, construction, hygiene, ventilation and heating, professional practice, land surveying, quantity surveying, modelling, water colours, sketching and measuring, etc., etc. This long list shows what an enormous variety of subjects an architect is expected to have some knowledge of, and makes one think that this life is almost too short to acquire all the knowledge requisite to make a successful career in our profession.

"An excellent rule of the Association is that 'country members' may send in designs to the classes of design by post, and the visitors write their criticisms upon the drawings. This, I think, would be a useful line for our Education Committee to take up in respect of our country students.

"The Council of the R.I.B.A. have had under consideration for some time a scheme for extended architectural education, and a very strong committee has been engaged formulating this scheme ; no doubt, before very long we shall receive official intimation of this.

"A very important resolution, and one that should be generally known by architects, was passed this year by the general body of the R.I.B.A., that after December 31, 1906, entrance to the Fellowship of the Institute shall, except under special circumstances, be confined to Associates or those who have passed the examination qualifying for Associateship.

"No doubt, this decision will materially help to increase the numbers of the Fellows, for there must be many practising architects who have put off joining the R.I.B.A. till a more convenient or less busy season, knowing that in all probability they would be accepted on application. It will, however, be a very different matter if a man is obliged to pass an examination before being admitted. How many of us who are busily employed in our practice could find time or be disposed to prepare for and pass an examination ?

"During the last year many important architectural schemes have been decided upon throughout the country ; the commencement of the building of the cathedral at Liverpool has been made, and during the next few years we shall be able to watch the growth of a great church under the hand of one of the greatest living church architects, in conjunction with a young architect who bears the honoured name of his grandfather, Sir George Gilbert Scott. The appointment of an architect to carry out important extensions to the national building, the British Museum, has been decided, and, in connexion with this appointment, it is interesting to remember that the assistance of the Royal Institute was asked by the Government.

"But more closely concerning ourselves, the long-discussed question of a new infirmary for Manchester has been decided upon. We congratulate our colleague, Mr. Brooke, on his success in the competition which took place.

"Many of us, no doubt, will see with regret the removal of the old infirmary from the central position in our city which it has for so many years occupied. Its black and grimy walls have been known to most of us all our lives, and we shall miss them when they have gone. Despite its blackness, there is a dignity in its design which, favoured by a splendid situation, has endeared it to all of us, but, independently of the question of convenience or inconvenience of working, we shall all, I think, agree that it is better to have the infirmary built in the comparatively healthy air of Oxford-road.

"An important question which will before long have to be decided is what is to be done with the site when the old buildings are removed. My own feeling is that it should be left as an open space entirely unbuilt upon, possibly laid down partly with grass and planted with trees which, if the air of Piccadilly is so good as some of the doctors have told us it is, should thrive well there. On this space I would reserve positions for statues of those of our townsmen who are considered worthy of this honour and of other public men. If this large space were left open, and much of the surrounding properties rebuilt, Manchester would possess one of the finest squares in the world.

"Our old city certainly wants some brightening up ; it has in many parts of it only a second-rate appearance, its streets are mostly too narrow, and although during the last few years a large part of it has been rebuilt, yet for the most part, especially in our principal street, with a few exceptions the buildings are old and dirty. It is a very serious question what materials should be used for new buildings in such an atmosphere as we have in Manchester, although this atmosphere has doubtless improved immensely since the use of hydraulic and electric power took the place of steam power, which required boilers and large chimneys belching out their black smoke continuously. All materials get dirty, and I cannot help thinking that in streets such as Market-street the best materials to use for facing the buildings is cement, on condition that the Corporation have authority to compel owners to paint them every two years. It would, no doubt, be objected that this would be very expensive to owners, but I do not think so ; the interest on the difference in the initial cost between a stone front or a brick and terra-cotta front and a cement front would go a long way towards paying for the painting. I am afraid I shall be considered rather a heathen for suggesting this, but I believe if it were carried out our streets would be lighter and brighter and cleaner and healthier than they are at present. Cement, if properly used, is a perfectly legitimate, though generally not a very desirable, material for building purposes. It should be treated as a plastic substance and not used as a mere imitation of stone. Mouldings should be small and refined, and ornamental panels and decoration can be freely used if not made to look constructional ; a great drawback to the use of it is that by continual coats of paint the mouldings get distorted and destroyed.

"The narrowness of our streets is becoming a very serious matter now that they are so much used by electric tramcars. It often strikes me, when standing at some of the busy crossings —as, for instance, where Corporation-street and Cross-street meet Market-street—whether light bridges for foot passengers could not be erected, which, if well designed, might be picturesque objects in our streets.

"A deplorable cause of ugliness in some of our streets is the necessity for many of the buildings having to be kept low or mutilated on account of owners on the opposite side of the street being possessors of certain rights of light. The difficulties in connexion with this matter have been very great in the past, but, since the judgment in the Colle's case, I think the difficulties will be minimised in the future. Probably before long the Bill promoted by the Surveyors' Institute and the R.I.B.A. may become law, and we shall then have some definite points to work to.

SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.

THE following is the greater portion of the opening address delivered last week by Mr. Thomas Winder, the President of the Sheffield Society of Architects and Surveyors :—

"There are at present no burning questions affecting us professionally ; registration, having been taken up by the Royal Institute of British Architects, should, I think, be treated by us as *sub judice*, especially as most of the allied societies have expressed their opinions upon it, and have nominated representatives upon the Committee which the Institute has formed to consider it.

"I would take this opportunity of impressing upon our members the importance of loyalty to the principal representative bodies of our profession. I believe, however, such loyalty would be better assured were we properly represented on the councils of these institutions. For some years past our Society has not been represented on the Council of the Royal Institute of British Architects—a state of things which, we feel, should not continue.*

"The Institute is capable of even greater usefulness than at present. I cannot understand why it leaves the Competitions Reform Association to do work which I think should be done by the Institution. It is now many years since our then president, Mr. Reginald Fowler, expressed the hope that we might soon be allied to the Surveyors' Institution, but this desirable alliance is still unaccomplished. We could be of mutual assistance to each other, and at this time we need to stand shoulder to shoulder to resist encroachments which are being daily made upon our duties by members of other professions—witness the fearful and wonderful plans recently drawn and deposited by a judge, whose own profession is protected by law against amateur encroachments.

"Last year I expressed my views upon the administration of by-laws by local authorities, and the experience of the past year has in no way modified such views. A suggestion was recently made that the Corporation should nominate a Court of Appeal, to which aggrieved property owners could have easy access. If such Court were properly constituted it might do valuable work. It should, however, consist of sensible men who would not take the usual official and erroneous view that property owners, builders, and even architects and surveyors, are continually attempting to evade the law and to scamp their work. What we ask is that councillors should make themselves acquainted with the true facts of the case, and that common sense and uniformity should be exercised in the administration of the by-laws.

"We have heard nothing more of the proposed new by-laws, but we have the assurance of the Town Clerk that we shall be consulted before these are finally put forward.

"Has not the time fully arrived for the consolidation of by-laws and of local and other Acts of Parliament relating to new streets and buildings ? At the present time one's knowledge needs to be as extensive as that of the daring property owner who attempts to take advantage (save the mark) of the London Lands Registration Act of 1899, with its three hundred and odd rules. Why, for example, should Chapel-en-le-Frith, which embraces an extensive country district, require rooms of greater height than Sheffield, with its slums and smoke ? It is with grim satisfaction that I have read the remarks of urban and city officials upon the administration of the Model By-laws by the Local Government Board ; an application which we are told renders it impossible for urban authorities and corporations to compete with builders and private enterprise in the erection of artisan dwellings ; a result which, I am sure, none of us regret, professionally or as ratepayers. It is to be regretted that a section of the Sheffield Corporation still adheres to the policy of providing artisan's dwellings, but I am thankful to see that this question has

* Presidents of allied societies are, *ex officio*, eligible as members of the R.I.B.A. Council if they are Fellows of the Institute, but the number of seats available (by the constitution of the council) is not equal to the number of the allied societies, consequently it is to some extent a matter of majority of votes. This, we think, might and should be altered. But if a society elects a President who is not a Fellow of the Institute, it debars itself from representation by its own act.—ED.

been taken out of the arena of party politics, and that those men of each party whose opinions we value most highly are giving the subject careful and fair consideration, apart from party interests. The provision of dwellings for artisans by corporations, as at present carried out, is totally unnecessary and extravagant. The private capitalist does, and will, if given fair play, provide more than enough of such dwellings at a reasonable cost, as witness the ridiculous *fiasco* at a Local Government inquiry held in a neighbouring town. After the inspector had been assured of the great need for corporation-provided artisans' dwellings, evidence was given that something like four hundred of the cottages in that town were unoccupied.

"The provision of cottages for the extreme poor is quite another matter, and none of us will grudge those even if provided at an apparent loss. Ordinary cottages are completely worn out in less than one hundred years. This is fortunate, as long before that time has elapsed most of them are out of date, sanitarily and otherwise, and very many of them are then in the wrong part of the city. This will be even more so in the future, as the extension of rapid transit in, around, and (I hope before long) far outside of our towns and cities will solve the artisans' dwellings question. I would suggest that the extreme poor should be catered for by the erection of one-story wood and galvanised iron huts upon land to be purchased by corporations. These have a life of twenty to twenty-five years, and I am assured by those who have lived in them that they are very comfortable. If properly-protected wood is used, the fear of fire should be almost *nil*, and, if fire did occur, there would be little danger with single-story buildings. At the expiration of twenty to twenty-five years these huts might be destroyed and new ones erected in more convenient positions. The increased value of the sites would often show a good profit on the transaction.

"Last year I drew attention to the danger of the heavy trades being driven from Sheffield through the administration of the by-laws, but a far more probable cause of this is the awful increase in our rates; an increase largely consequent upon the reckless manner in which Sheffield is keeping ahead of most other towns and cities in the amount to which its rates are mortgaged. A further loan of 270,000*l.* is to be asked for in addition to the five and three-quarter million pounds we already owe. The President of the Auctioneers' Institution in his very able address informed his hearers that Sheffield is indebted to about 10*l.* per head of population, but it perhaps puts it more graphically to say that it is indebted to the extent of probably 50*l.* per ratepayer, and the Corporation is asking for power to increase that indebtedness by another 6*l.* or 8*l.* per ratepayer. The payment of interest and sinking fund upon these loans constitutes a very serious burden upon property, and although we are constantly told that part of this debt has been incurred for profit-earning concerns (profits, by the way, to be earned from the unfortunate debtors, the ratepayers), we know that other parts are for work which has since become more or less obsolete, and some of which has actually been replaced by work paid for out of later loans. Those of us who are daily dealing with values of property are only too well aware of the seriousness of the position which is being created throughout England and Wales by this second national debt, a debt which now amounts to almost three hundred and forty-three millions. It is satisfactory to see that the Public Loan Commissioners are making a decided stand against further increases. I believe the present 'slump' is largely due to the fact that for some years past we have, in addition to our incomes, been spending vast sums of borrowed money, thus creating an artificial prosperity; and whilst perhaps delaying the periodical visit of bad trade, leading to a far greater depression in the end. In proof of this the demand for building land is less at the present time than I have known it during an experience of a third of a century.

"Last year I suggested the desirability of the Sheffield Society of Architects and Surveyors undertaking the chronicling of the names of architects of old and new buildings in Sheffield. I am the more convinced of the desirability of this being done from noting how seldom the architect's name appears in notices of new buildings in the daily press, even where such notice is illustrated by the architect's own drawings; I also mentioned the work which we might do towards the preservation of archæological facts and drawings, and although our Society has done nothing towards this, I am pleased to see that a local branch of 'The National Trust for Places of Historic Interest or Natural Beauty' has been formed.

"A question which concerns us as surveyors and valuers is that of street dedication charges, and of the costly way in which road-making is done, in cases where it can be imposed upon the owner. During the past year I have come across the two following cases. A person paid 700*l.* for an old property abutting upon two streets—he received an account from the Corporation for 217*l.*, or almost one-third of the price he had paid for the property, this being dedication charges upon *one* of the streets. Another owner with four cottages showing a gross rental of 70*l.* per annum, was mulcted in about two years' gross rent. Each street was made upwards of twenty-five years ago, at a cost of probably 3*l.* per lineal yard, and has since been maintained by the owner. These are but two out of scores of cases, but they are particularly hard upon the owners from the fact that each property abuts upon two streets. It is patent to every one that cottage properties do not require frontages to two streets, and that the second street in each case must have been provided for the benefit of the public. Unfortunately there is an idea amongst certain of our citizens that the ownership of property is a crime to be punished wherever possible by the infliction of charges in one form or another, but we, as experts in property, should do our best to educate them out of this, remembering that those who are most hardly hit by these grossly extravagant dedication charges are the thrifty lower middle-classes, and the careful working-man, who has often invested the whole of his savings in the purchase of a home, only to find that his thrift has landed him in serious financial difficulties.

"The Bill recently before Parliament for the taxation of ground values deserves careful consideration by us. Its supporters claim that it is needed to counteract the holding over of ground by land-owners with a view to the obtaining of an increased price. This is fallacious, as such holding over seldom occurs. The greatest difficulty in the administration of the Bill, should it become law, will be the determination of what is building land. Six years ago a client of mine was compelled to pay Succession Duty (in itself a heavy tax on land) at building land valuation upon ten or twelve acres of land, which my brother and I rightly contended was merely agricultural land; and although I have advertised this land, I have not received half a dozen applications for building plots upon it, and more eligible land abutting and near it has just been sold by public auction at about one-third the value put upon mine by Somerset House. Had this Bill become law six years ago my client would by now have paid six years' rates, at Building land value, for land for which there is no demand, and which is let at about twenty-six shillings per acre per annum. Any legislation which tends to reduce the open spaces in and around our centres of population will be as injurious to public health as Pitt's Window Tax, and such must be the result should the Bill become law, as the authorities must in fairness tax *all* open land which the ingenuity of the rating surveyor can possibly ticket 'Building land,' including commons, parks, recreation grounds, squares, and those valuable adjuncts to our large towns and cities, the old-fashioned gardens of mansions.

"As architects and surveyors we should be interested in the question of the universal adoption of the metric system. This has been largely adopted in other countries, and although strongly recommended by our Chambers of Commerce, we are too conservative or too conceited to follow suit. Our commerce is suffering in consequence, and all who have to make much use of figures lose valuable time by the present system. Our valuations, estimates, and quantities would be more readily calculated in decimals. The Ordnance Surveyors have recognised this, and have adopted decimals in showing the contents upon the new ordnance maps. I think we should support the Bill which is being promoted to introduce the system universally. . . .

"Attention should be drawn to the acceptance by Somerset House of valuations for probate made by persons who are totally incompetent to make a fair valuation, but who do this work at prices which a properly qualified man cannot possibly afford to do.

"In conclusion, I had intended to say something upon the valuations submitted by witnesses in arbitrations, etc., but after a careful comparison of the reports of numerous case, I find umpires and juries have discovered that a fair value can generally be arrived at by taking the average between the amounts given by the valuers on each side; and as the figures from which I have arrived at this conclusion contain such examples as the following, taken almost at random—

Valuation on behalf of Vendor.	Valuation on Purchaser's behalf.
£20,108	£13,808
1,301	387
3,125	900
12,594	950
4,392	1,562
3,009	251
2,786	1,129
20,238	13,122

figures which were supported on each side by well-known competent professional men, I have come to the conclusion that the question is far too vast for my comprehension, and that whatever one may think, it is perhaps best to say little, beyond asking, Is this one reason why Somerset House does accept valuations from men who are not known as competent valuers?"

SEWAGE PURIFICATION WORKS FOR SMALL POPULATIONS.*

IT is often assumed that the design of sewage purification works for a private house or small institution is a much simpler matter than where the sewage of a large town has to be dealt with; but the author's experience with a large number of sewages of both classes, some of which, as at Yeovil, Manchester, and Leeds, have been highly charged with manufacturing refuse, points to the conclusion that the sewage from a single house is often more difficult to treat than that of a large town. There are several reasons for this.

In the first place the amount of work to be done in a town can generally be ascertained beforehand with some degree of exactitude. The present population and the rate of increase are known, accurate information as to the volume of the water supply is often available, and in many cases the sewers are already in existence, so that the flow therefrom can readily be gauged.

In a private house, on the contrary, especially if it is a new one, it is often a matter of the greatest difficulty to ascertain even approximately how many people are likely to inhabit it, and it is seldom that any reliable information as to the amount of water consumed can be obtained.

Furthermore, the population of a town is generally fairly constant, or, if it varies, as in the case of a watering-place, the limits within which such variation takes place are known, and the resident population usually forms a considerable proportion of the whole. The variations in the number of occupants of a country house are often much greater, and do not take place with anything like the same regularity.

The designer of a private sewage purification plant must, therefore, run the risk, on the one hand, of making the works too small, or, on the other, of spending money unnecessarily in providing more accommodation than is actually required.

The sewage of a single household, moreover presents wider differences in composition and strength than that of a larger population which tends more nearly to an average; and in the case of a town a representative sample of the sewage can more often be obtained for analysis than in that of a private house.

From houses of the class for which private sewage disposal works are most often required a very large amount of grease is usually sent down the drains. This occurs also at certain public institutions, more particularly at asylums. At one institution with which the author had to deal the waste of fat was enormous, and great difficulty was experienced in inducing the authorities to take proper measures for its interception.

It is to be feared that cases in which fat is present to such an extent as to exert a marked effect on the purification of the sewage are by no means uncommon. The difficulty which

* A paper read before the Institute of Sanitary Engineers at a meeting on the 5th inst., by Mr. Arthur J. Martin, A.M.I.C.E., Mem. San. Inst.

it causes is often aggravated by the fact that it reaches the purification works in a liquid state, its sojourn in the drains being too short to allow it to cool and solidify. The consequence is that it forms a coating over other solid matter, thus to a great extent shielding it from effective bacterial action.

It may be noted in passing that grease traps, where they occur, are generally too small, and in too many cases they are not properly looked after. Their action would be greatly assisted by allowing the scullery waste to run for a short distance in an open channel before it enters the trap.

Another substance which is sometimes present in sewage in such quantities as to cause appreciable difficulty in its purification is soap. In the sewage from a private house the amount is rarely so great as to give any trouble; but in institutions which take in washing, or in asylums where a great deal of foul linen has to be washed every day, very large quantities are often used. In one case which came under the author's notice recently the amount of anhydrous soap found in an average sample of tank effluent was no less than 32 parts per 100,000. This is, of course, irrespective of the quantity destroyed by use and in the preliminary treatment, and takes no account of the proportion of moisture which soap always contains. The difficulty caused by soap is due partly to its intractability, and to the large amount of oxygen which it absorbs, and partly to the greasy and offensive slime which it forms on the surfaces of the filtering material.

That fat and soap are by no means the only enemies with which the engineer has to contend in dealing with the sewage of public institutions is shown by the revelations made in connexion with a case which recently came before the magistrates at Epsom. It was stated in the course of the trial that sugar, margarine, and even bacon, were melted and sent down the drains, and that pepper, mustard, and condensed milk were got rid of by the same channels. The effect on the sewage purification works was not stated; but there is little doubt that the manager must occasionally have had a very trying time.

The sewage of private houses and of infectious diseases hospitals often contains large quantities of disinfectants; and while these, if used in reason, should not interfere to any serious extent with its purification, certain kinds, such as bichloride of mercury, when present in too large a proportion, are very inimical to bacterial action.

A further illustration of the difficulties which are met with in dealing with sewage of small communities is afforded by the case of a small installation which was laid down under the author's advice some years ago. As a rule it did its work satisfactorily; but occasionally there was a marked falling off in the results, and the liquefying action of the septic tank seemed to be temporarily suspended. Inquiry disclosed the fact that the drains around the house were subjected to a quarterly cleansing, hydrochloric acid being used for the purpose. Under these circumstances it is hardly surprising that the purification works were subject to recurring and severe attacks of indigestion.

Cases are occasionally met with, more often in connexion with a village than with a mansion or public institution, in which, for want of an adequate water supply, the sewage is excessively strong. It is generally believed that bacterial purification processes are inhibited when the sewage is concentrated beyond a certain point; and evidence was given before the Royal Commission on Sewage Disposal to this effect. While it is probable that the limit in question is seldom reached in practice, and that any sewage can be effectually dealt with in suitably designed works, a real difficulty is presented by the practical certainty that sooner or later a proper water supply will be provided. A purification plant designed to meet the present need will, therefore, in all probability become inadequate in the course of a few years, while if works for the ultimate duty are laid down at the outset, they will not only be far too large for the immediate requirement, but will be incapable of effecting the high percentage of purification which the concentrated sewage requires.

Apart from all differences in the original composition or strength of the sewage, there is a further consideration which is too often lost sight of in the application to small installations of the data obtained from works on a larger scale. The sewage of a city or large town is generally collected at a considerable distance from the outfall. During its passage through the sewers the solid matter is subjected to a process of continuous disintegration, so that it reaches the purification works in a more or less finely divided state. This is particularly noticeable where pumping is resorted to. Over and above this mechanical breaking down of the solid matter, the sewage undergoes in the sewers a preliminary bacterial action, which is of great importance in its subsequent treatment. In particular, the whole of the urea, containing a large proportion of the nitrogen in the sewage, is often decomposed before the latter arrives at the outfall. The purification works of a large town are thus relieved of an important part of the work which would otherwise fall to them, while smaller installations, which, as a rule receive their sewage in a comparatively fresh condition, have this work still to perform. This consideration has often been lost sight of in the design of small septic tanks, the duration of stay provided for in them having been only the same as was found to suffice in larger works, with the result that the tanks have sludged up in a surprisingly short space of time, and large quantities of undigested solid matter have passed on to the filters.

There is another circumstance which leads to the escape of solid particles from a small septic tank, and which often does not receive the attention which it deserves—namely, the disturbance caused by the inflow. In tanks of considerable length there is ample room for the incoming sewage to come to rest, even where the inlets are not arranged to the best advantage. In a small tank, on the other hand, the inlet and outlet are so close together that the disturbance caused by the one is communicated almost immediately to the other, with the result that appreciable quantities of organic matter are washed out of the tank. This tendency is aggravated by the fact that the sewage comes down in flushes, which, where the drains are short, arrive at the works in something like their full force. The emptying of a bath or washtub causes an enormous disturbance in a small tank, to the contents of which the discharge even of a water-closet bears a greater proportion than that of a large flush tank to those of the septic tanks serving a town.

Passing on to considerations of a broader nature, we come first to the question of choice of site. For dealing with the sewage of a town or village a suitable site can generally be found somewhere in the neighbourhood, and the Local Authority can obtain compulsory powers for acquiring it, which are denied to private owners and to the governing bodies of many public institutions. The latter must therefore, as a rule, deal with their sewage on their own land, which generally means that the sewage works have to be in fairly close proximity to the house or other building. In such a case the utmost care must be taken to prevent smell from the works, in addition to which it is sometimes necessary to render the latter invisible.

Where, on the other hand, a site can be obtained at some distance from the house, its utilisation often involves a difficulty of another kind, namely, lack of the fall, which is absolutely necessary for any complete system of purification. Of this, as little as 9 in. or 1 ft. may be made to suffice, while from 4 ft. to 6 ft. is desirable; undue limitation in this respect involving a material increase in the extent and cost of the works.

In dealing with the sewage of a town, where it is possible to use gradients of 1 in 1,000, or even flatter in case of need, a thousand yards of outfall sewer, more or less, do not entail any serious loss of fall; but to convey the sewage of a single house to any such distance, at the flattest gradients which it is considered safe to use in such cases, some 30 ft. or 40 ft. of fall is required. It is often impracticable to obtain anything like such a fall, except by pumping. The construction and operation of a pumping plant involve more expense and trouble than most private owners are willing to face, and are no light matter for an Institution or good-sized village.

The difficulty of lack of fall has been met with in several cases with which the author has recently had to deal. He has overcome it by liquefying the sewage at the head of the outfall drain, whereby he has been enabled to carry the effluent to filters at any desired distance in a sealed main without appreciable fall. Unnecessary difficulty is often caused by postponing the question of dealing with the sewage until after the drains have been laid, and using up in the latter the whole of the available fall, leaving none for the outfall drains and purification works. Gradients of 1 in 40 and 1 in 60 are very desirable for house drains where the necessary fall can be spared; but where their adoption involves difficulties in the disposal of the sewage, flatter gradients should be used, which, with due care in laying the pipes and proper means of flushing them, may quite safely be done.

The difficulties inherent in the purification of small quantities of sewage are enhanced to no small extent by the limitations under which one has to work in dealing with them. The restrictions imposed by proximity to buildings have already been referred to. Not less important are those due to the scale of the works. In treating sewage in large quantities the engineer may avail himself of every device whereby labour can be saved or the efficiency of the treatment enhanced. In a small installation, on the other hand, such elaboration of the design would be quite out of place, partly on the ground of cost, but chiefly because the refinements which are natural and proper in large works involve undue complexity when reproduced on a small scale.

There is yet one other disadvantage under which the small installation labours as compared with larger works. The latter are almost invariably placed in charge of an attendant, who may or may not devote his whole time to them, but who does, at all events, pay them a visit every two or three days. The small domestic installation also has its nominal caretaker, who is generally a gardener, or other functionary about the place; but his interest in his charge and manner of performing his duties only too often present a marked contrast to those evinced by the trained sewage works manager. The fate of the small installation is well illustrated by a case which came under the author's notice a couple of years ago. The works comprised a septic tank and three filters, two of the latter constituting the working set, and the third being held in reserve. In order to bring the spare filter into use, it had to be connected with the supply and discharge pipes respectively, a very simple operation for which plain printed instructions were provided. After a time complaint was received that the filters were not working properly. It would have been a miracle if they had been, for the author, on proceeding to the spot, found filters Nos. 1 and 2 connected with the supply pipe, and Nos. 2 and 3 with the discharge. The mistake was pointed out and duly rectified, and for a while everything went smoothly. At the end of a few weeks, however, more complaints were received, when it was found that precisely the same mistake had been made as on the former occasion. The caretaker was an intelligent man, whom it would be an insult to describe as incapable of understanding his duties; and the author has little doubt that had there been more for him to do about the installation the work would have engaged his more serious attention. In other cases works have been left absolutely without attention for months at a time. Experiences such as these pointed unmistakably to the necessity for making these small works as far as possible independent of attention, and so laying them out as to leave no loophole whatever for error to creep in. The author has accordingly in his later work kept this consideration steadily in view.

He has set forth the difficulties met with in the design of small installations in considerable detail, not because they are insuperable, but because he believes that they do not, as a rule, receive the attention which they deserve, the rules which apply to larger works being followed without due regard to the differences in the circumstances. In other cases little or no care is taken in the design of the works, the owner merely telling his builder to put in a "tank," and leaving it to his imagination to supply the necessary directions. A "tank" of a kind is accordingly laid down, bearing a more or less distinct resemblance to something which the owner or builder has at some time or other seen or heard of. It may happen by good luck that the "tank" meets the case, no actual nuisance being caused, and the effluent being discharged into a body of water which is not under the charge of a Rivers Board or other vigilant authority. In other cases trouble is experienced, and after a certain amount of fruitless tinkering a professional man is at last called in. By this time so much money has been wasted that the owner is reluctant to spend more, and especially loth to give up the "tank" upon

which so much has already been expended, and with which the engineer has accordingly to do the best he can, when it would be true economy to start *de novo*.

It will now be convenient to sum up the requirements to which a sewage purification plant for a mansion or public institution ought to conform.

It should be unobtrusive, and capable of ready concealment in case of need.

It should give off no perceptible smell.

It should be simple, automatic, and as far as possible foolproof.

For obvious reasons automatic working is particularly desirable in the case of hospitals in which infectious diseases are treated. In this connexion it should be distinctly understood that no amount of skill in the design of an installation will remove the need for reasonable attention to cleanliness in its management. Inattention to this point has been the cause of the greater part of the nuisance which has been experienced from works of the kind.

In view of the fresh condition in which the sewage arrives at the outfall, the necessity for some form of preliminary treatment will be generally conceded. Mere screening will not, as a rule, suffice; and the frequent attention required by screens, and the liability to nuisance therefrom, render it undesirable to use them in such cases as those under consideration.

A defect of screening, as compared with more thorough modes of preliminary treatment, is that it does not effect that blending of the sewage which is desirable, especially in small installations, where its composition varies so greatly at different hours of the day. Some form of tank treatment may, therefore, be regarded as absolutely necessary in such cases. Such treatment may be either chemical or bacterial; but chemical precipitation, while undoubtedly efficient for the removal of suspended solid matter, has certain drawbacks which will prevent its general adoption for small installations. Of these drawbacks the cost of the chemicals must be regarded as the least, the chief being the necessity for frequent attention, the difficulty of disposing of the sludge, and the risk of nuisance from the latter and from the tanks, which must of necessity be open.

It may be added that the chemicals commonly used for precipitation, unless their addition to the sewage is regulated with a precision which it would be hopeless to expect in small works, are found in practice to be inimical to the purification of the liquid. The preliminary treatment will, therefore, as a rule, be bacterial, and will take place either in cultivation tanks or septic tanks. Of these the author personally prefers the latter, largely for the reason that a septic tank, which may be completely hidden, can be used in situations where any open tank would be inadmissible.

In this connexion it may be remarked that a great deal of nonsense has been spoken and written as to the alleged "enormous cost" of arching over septic tanks, and a roof of peat litter has been suggested as being permeable by the tank gases and at the same time deodorising them. Inasmuch, however, as these gases will diffuse freely through concrete, and the overlying soil constitutes an excellent deodorant, a peat roof possesses no advantage over the more substantial covering, which will in most situations be preferable; and everyone who has any practical acquaintance with the subject knows that a concrete arch is in reality a comparatively inexpensive item.

One great practical advantage of covering a tank in this way is that it admits of the latter being placed on any site on which room can be found for it, not only without risk of nuisance, but without giving the slightest indication of its presence on the surface. It will, moreover, in no way interfere with the utilisation of the ground over it.

In view of the variations which take place in the population of a country house, which may at one time be crowded with visitors, and at another be occupied by only a few servants, it has been suggested that the septic tank therefor should be in duplicate, so that the working capacity may be made to conform in some measure to the flow. The same consideration applies to an infectious diseases hospital, which may be empty, except for a small staff, for months together.

Regarding the matter from a purely theoretical point of view, it is possible that for certain sewages an excessive stay in the septic tank may be in some degree disadvantageous. The author's own experience shows that any difficulty consequent thereon can in most cases be overcome without going to the expense of duplicating the tank. He is also convinced that in small works, at all events, there is nothing to be gained by sub-dividing the filter, and that the smallest flows which are met with during slack seasons will suffice, if properly utilised, to keep a full-sized filter in good condition.

The great practical objection to duplication, apart from its cost, is that it renders the working of an installation dependant on the judgment and vigilance of the attendant. From a long experience of the way in which these small works are looked after, the author has little doubt that one tank or one filter would often be found at work when both are required, and *vice versâ*.

Although some septic tanks seem to go on indefinitely without requiring to be cleared, it is not safe to reckon on this; and facilities should always be provided for removing any residuum which may accumulate in them without first drawing off their liquid contents. The reason for this is twofold. In the first place, the emptying of the tank destroys the septic condition therein, which may take some weeks, or even months, to re-establish; and, secondly, the process of emptying, especially in inexperienced hands, is liable to be a very offensive one. The removal of the mineralised residuum, on the other hand, may, if proper means are provided for the purpose, be effected expeditiously and without nuisance.

The final treatment of the sewage may be effected either by irrigation or in bacterial filters; but the treatment of sewage or sewage effluent on land in the neighbourhood of a house or public institution is liable, unless under exceptionally careful management, to give rise to nuisance. Under favourable circumstances the tank effluent may be got rid of by means of a series of open-jointed agricultural pipes laid just under the turf; but scrupulous care must be taken in the execution of the work, or failure is bound to result.

It will generally be found best to complete the purification in a bacterial filter or filters, and this course has the important advantage of placing the whole of the treatment of the sewage under ready control.

A sprinkling feed to the filter is an important aid to purification; but, inasmuch as the showering of tank effluent through the air is liable to give rise to a certain amount of smell, this method should not be used unless the filter is at a safe distance from the house. The exposure of the tank effluent may be avoided by the use of a contact bed, either alone or as a preliminary to a trickling filter. Whatever method of filtration is employed, the tank effluent should not be allowed to run into the filter continuously, but should be ponded until the proper charge has accumulated. By utilising the upper part of the septic tank for this purpose, the expense of a separate ponding chamber will be saved. For the ponding and release of the tank effluent the author uses a very simple automatic gear, consisting merely of a supply valve, a discharge valve, a weighted lever, and a float on each of the valve rods. The working is as follows:—As soon as the proper quantity of effluent has accumulated, the float on the supply valve rod rises, opening this valve and closing the discharge valve. The tank effluent is then delivered to the filter, either through a series of perforated distributing pipes, or below the surface of the material, as the circumstances of the case may render advisable. If sprinklers are used, means should be provided for freeing the tank effluent of any suspended matter which it may contain, and which would otherwise choke the perforations. The author prefers fixed sprinklers to moving ones, especially in small installations, where the attention required to keep moving distributors in order would constitute a serious drawback to their use. A perfect distribution of the tank effluent over the surface of the filter is secured without movable distributors by simply varying the head on the orifices.

The weak point of the trickling method—namely, the tendency, which has been pointed out by several experimenters, for the effluent to find short cuts through the filtering material—is overcome by the use of a contact layer in the bottom of the bed, wherein every part of the liquid is held for a short but sufficient period in contact with the filtering material. On the expiration of this period the discharge valve is opened, releasing the filtered effluent.

In dealing with an ordinary sewage, a single filtration, conducted as above described in a filter of adequate depth, will, in the majority of cases, effect sufficient purification; but for concentrated sewages of, say, two or three gallons per head, a second filtration may sometimes be desirable. In such cases the depth of the liquid in the first filter will afford the necessary head for the sprinklers.

For filling the filters the author has found no material to beat ordinary furnace clinker, broken to a small gauge and freed of dust. In some localities there is a difficulty in obtaining clinker, but in no case within his experience has the difficulty proved insuperable, and it is generally worth while to pay the cost of carriage from a distance for the sake of obtaining a material which can be relied on to give satisfactory results.

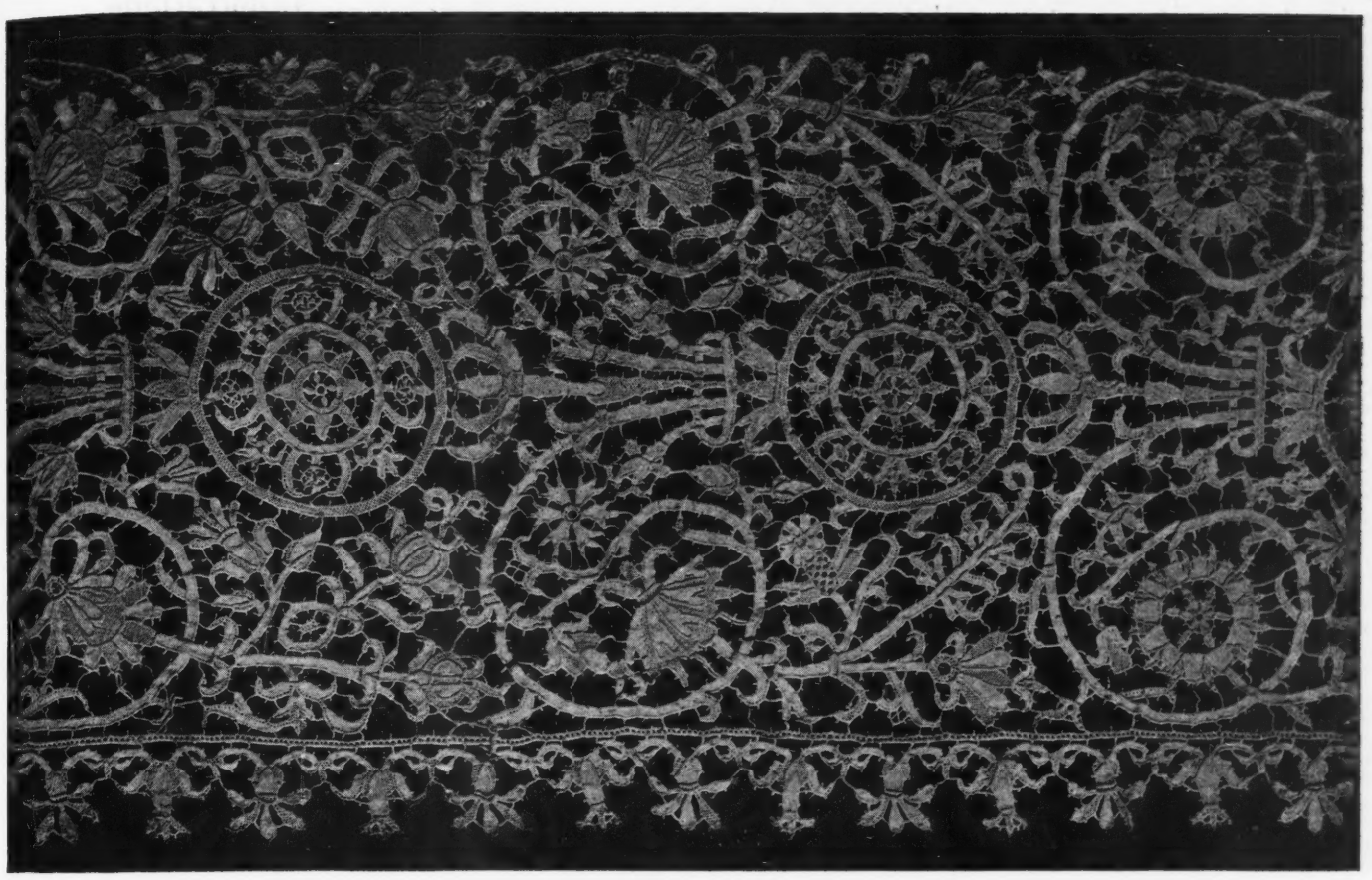
As it is customary for writers who have used a particular process of purifying sewage to claim that their process is the best, if not the only one which should be employed, it may not be amiss for the author, while expressing his belief that the method which he has described is as simple and effective a solution of the problem under consideration as can well be found, to add that he is fully alive to the possibility that other methods, properly applied, may yield equally satisfactory results. His main object in this paper is not to inculcate any particular mode of purification, but to lay stress on the need, whatever method may be adopted, for carefully collecting and checking the data required for the design of the works, and especially for the utmost vigilance in watching for any circumstances which may by any possibility interfere with the process employed.

It may not be out of place to utter a word of warning as to the laying down of the works. Where these are small, and at a considerable distance from the office, there is always the temptation to save the owner's pocket by relying upon local supervision of the construction. In nine cases out of ten possibly this may safely be done; but in the tenth all concerned may find abundant reason to regret that the designer did not keep the superintendence in his own hands, even at the cost of what looks like a disproportionate expenditure of time and money in travelling to and from the work.

The care of these small installations also deserves more attention than it sometimes receives. In particular, written instructions should be provided, clearly and explicitly setting forth what the caretaker has to do, and, what is not less important, what he should abstain from doing. In the absence of written instructions, there is always the risk of the man in charge leaving and his place being taken by another who has not the faintest idea of what he is required to do. Many breakdowns and much disappointment would undoubtedly be saved—especially where the owner himself does not take an active interest in the works—if these are periodically inspected by the designer. In saying this, the author wishes to avoid any reflection on the large number of caretakers whose performance of their duties leaves nothing to be desired. There is, unfortunately, a minority who seem to be under the impression that the microbe does everything, leaving nothing to be done by the man, with disastrous results to the installation. To caretakers such as this an occasional surprise visit from the designer of the works will act as a wholesome stimulus.

In the foregoing remarks the author has endeavoured to show that the efficiency of a sewage purification plant, on the smallest as well as the largest scale, is dependent on three factors, namely, its design, construction, and management, inattention to any of which will almost certainly result in failure, but that by the exercise of reasonable care in each branch of the work success may be assured.

PARISH CHURCH RESTORATION, SINNINGTON, YORKSHIRE.—The ancient parish church of Sinnington was reopened recently after restoration, costing about 1,300*l*. In addition to this a stained-glass window has been inserted in the east end, a new oak pulpit, lamps for the interior of the church, and a lectern from the old oak of the church. Mr. Hodgson Fowler, of Durham, was the architect for the work, and Mr. Alfred Barnes, of Malton, the contractor. A new heating apparatus has been inserted by Messrs. W. Richardson and Co., of Bridlington; the bells have been rehung by Messrs. Mallaby and Son, Masham; and the east window is the work of Mr. Knowles, of York.



Venetian Needlepoint Lace. (*From an illustration in the "Burlington Magazine."*)

VENETIAN NEEDLEPOINT LACE.

THIS charming example of decorative work is reproduced, by permission, from one of the illustrations to an article in the *Burlington Magazine* on the examples of old lace in the collection of Mr. Arthur Blackborne. It is described as "flat Venetian needlepoint," but the date is not given.

As a beautiful example of the application of scroll design to lace work, it cannot fail to be of interest to architects and decorative designers.

The size of the original piece is 58 inches by 8½ inches. We are indebted to the *Burlington Magazine* for kindly lending us the photograph from which their illustration was produced.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

THE annual meeting of the Incorporated Society of Medical Officers of Health was held on Friday last week at the Rooms of the Royal Statistical Society, No. 9, Adelphi-terrace. Dr. J. F. J. Sykes (Medical Officer of Health for St. Pancras), the President, took the chair, and a vote of thanks was accorded to Dr. Groves (Isle of Wight), the retiring President.

Public Health and Architecture.

Dr. Sykes then delivered his presidential address, in the course of which he said that the medical officer of health is constantly called upon to express opinions as to constructive architectural conditions in buildings, old and new. He should have a knowledge of the evolution of dwellings and be familiar with modern methods of construction and arrangement of buildings as affecting health. He must be able to follow an architect in his suggestions for amelioration of unhealthy conditions and to grasp the relative hygienic values of the various alternatives upon which architects may seek his opinion. His work must be complemental to that of the architect, and the two must harmonise for the benefit of the public. In prehistoric dwellings would be found the first rudimentary shelters, subject to the grosser unhealthy conditions under which primitive man must have suffered. Some types for temporary use were not unknown to us in this country to-day. In nomad dwellings the picturesque forms of construction appeared, together with the elements of the textile arts; but, whereas the occupants of these movable dwellings escaped some conditions inimical to life, they incurred other risks. Some types of these dwellings still wander through our land. Early fixed dwellings foreshowed later types, by illustrating theexperiences being gained by man in regard to site, materials, form, and arrangement; experiences that made towards permanency, defence, greater dryness, warmth, cleanness, and other improvements to better life and health. Dwellings of this rough class, and even rock-dwellings, we also knew in this country at the present time. From these early forms it was not difficult to reconstruct the main outlines in the evolution of the dwelling, generally, and of the English dwelling in particular. Each nation had evolved its own type of building according to time, place, and tradition, and each type showed the attempts to cultivate or avoid conditions favourable or inimical to health according to the exigences of climate, soil, habit, and other influences. In historic times we found the elements of architectural construction proper commencing in the houses of the Pelasgians. Cottages of similar picturesque, but insanitary type, were still extant, varying only in details. Timber houses were adopted mainly by peoples north of a line drawn across the Eurasian continent through the Aryan centre from south-east to north-west. Abundance of forests facilitated their construction; and they afforded warmth and dryness, and in the east more security during earthquakes. The Mohammedan nations suited their architecture to tropical heat and sandy desert winds by contracting the size of the openings, seeking coolness in darkness, stagnant air, and dirt. The Mediterranean civilisation passed through several stages of architecture, extending over various non-contemporaneous periods—Assyrian, Phœnician, Egyptian, Hebrew, Greek, Etruscan, Roman, Mediæval, and Renaissance. Of the earlier of these we judge the architecture by the remains of palaces, but the common people still dwelt in mud huts, clay-brick cabins, or cobble-stone cots. And even down to the spacious days of the Tudors in this country, history tells us of the unhealthy dwellings of the common folk—the flimsy shanties, with clay floors, and hearth in the centre, with smoke-hole above and wind-hole at side. Passing onwards to the present day, the conditions in cities and towns were much ameliorated by Building Acts and By-laws, but a large number of questions are still in a state of flux, and the increasing pressure of buildings one upon the other in crowded centres was continuously raising fresh questions as to unhealthy influences and physical degeneration. The width and formation of streets, so as not only to subserve traffic requirements, but also to secure circumflation, and the relationship of the height of buildings were in a fair way towards settlement. The adoption of angles of light was simplifying the problem; and attempts to deal with ancient lights by legislation in a more reasonable manner was making slowly towards the solution of the very troublesome question of open space about buildings. But we were still far behind the Continent in neglecting to adopt a system of "zonification" and "stratification" of our buildings in our cities, a system that had become highly developed in German cities and towns, preventing their extension in the haphazard manner permitted in this country, by which endless difficulties as to light, air, and open space were created. The regulation of the construction of courts within buildings was still very unsatisfactory, and the possibilities of creating unhealthy conditions threaten us with disastrous effects in the future. With regard to the movement of air in relation to buildings, we did not sufficiently differentiate between circumflation about a building, perflation through a building, ventilation within a building, and aerial disconnexion from a building. The first had been previously explained. The second was becoming more important now that the vertical perflation and ventilation of a dwelling-house through the staircase-well is disappearing with the reconstruction of houses in flats, in which only the horizontal movement of air was possible, and emphasised the imperative necessity for preventing the obstruction of perflation or through-ventilation in these apartments. It was easy to convert flat dwellings into cave dwellings and to create a new generation of troglodytes, if a sufficient proportion in a degenerated condition survive the process without the saving grace of wild or country life. It was too often forgotten that the origin of the word window is wind-hole, and that glass is impervious to air. The ventilation of an under-crowded dwelling-room and of a temporarily excessively over-crowded place of assembly required totally different treatment. The provision of open areas to sunken parts of buildings was much neglected, and they were permitted to disappear in a manner little conducive to produce healthful results. The exclusion of wetness and dampness from

buildings had in recent years received beneficial attention; but some of the regulations for excluding effluvia were very trying to the architect, and equally good results might be obtained by less onerous conditions, especially with regard to the excessive requirements for sanitary conveniences external to buildings, as compared with the less sufficient for those inside. The dwelling requires to be made the principal sanitary unit in legislation and administration on the lines of the precedent set for the regulation of underground dwellings. There should be a limit to the extent to which domestic and sanitary conveniences may be combined, together with regard to health and architectural possibilities. Different classes of dwellings require different regulation, but those of the working classes require most consideration. "There is more hope for the country from the improvement of our homes than from any other source," said the Bishop of Manchester recently. In the centres of our large cities flats for all classes appear to be a modern necessity, and they are increasing in numbers. There was no reason why none but perfectly healthy flats should be constructed, but we had not reached that stage yet. The details and possible hygienic errors of arrangement and construction were numerous, and require fuller consideration than had hitherto been paid to them; and this applied not only to those intended for the working classes, but also to those for the well-to-do. The duties of the medical officer of health in certifying certain of these composite buildings were very important, and would influence the future health conditions of English homes for better or for worse, according to the seriousness with which they were regarded, and the thoroughness with which they were performed. The sub-let tenement house, in its unadapted original architectural arrangement, was also their serious concern. The present legal provisions and by-laws as to this class of house did not sufficiently differentiate between constructive arrangement, fitting, and usage; and the first two of these were lamentably uncontrolled. The provisions for underground dwellings had much improved since 1891, but it was easy to evade them, and there were no provisions for regulating certain unhealthy conditions in dwellings partly underground, but not technically within the legal definition. The improvement of underground bakehouses must have brought home vividly to many medical officers of health the importance of studying structural conditions and architectural alternatives for reducing the unhealthiness of such places; and the feeling that underground restaurant kitchens require similar treatment was testimony to the increasing attention paid by medical officers to the architectural side of their work. The same applied to other premises where food was prepared, and also to other work-places. With the improvement of transit, the erection of suburban dwellings was engaging more attention, but the possibilities in suburbs and more open country were much greater and much simpler towards healthful arrangements, although two-flat cottages and similar erections were becoming numerous. Building regulations in rural districts were engaging particular attention at the present moment, with a view to simplifying them in some directions and strengthening them in others; and it was a hopeful sign that medical officers of health advising rural district councils were taking such deep interest in the framing and modification of such regulations. Perhaps too many details had been entered into, but many more remained to be considered, and the accumulation of these details showed how wide and complicated was the architectural side of the duties of a medical officer of health. One of the fundamental errors of administration at present was that the medical officer was called upon to certify after construction, and had no opportunity of advising before, and of suggesting improvement and simplification, often with the saving of considerable expense. As curative medicine was followed by preventive medicine, so curative sanitation was impatient to be followed by a new era of preventive sanitation.

In the evening the members dined together at the Trocadero Restaurant, Piccadilly-circus, the President occupying the chair. Among those present were:—Mr. Alderman Idris (Mayor of St. Pancras), Dr. Whitelegge, Dr. Pye-Smith (Vice-Chancellor of London University), Dr. W. A. Bond, Sir T. Stephenson, Dr. G. Millson, Mr. Courthope Munro, Dr. Brown, Mr. T. W. Cutler, F.R.I.B.A., Dr. Shirley Murphy, Dr. Groves, Dr. Newsholme, Mr. Andrew Clark, Dr. Priestley, Mr. I. Young, and Mr. W. A. Lawton (Secretary).

The loyal toasts having been honoured, Dr. Whitelegge proposed "The Municipal Authorities," remarking that the Municipal authorities of this country had a great and increasing burden cast upon them, because the tendency to decentralisation increased as time went on. One thing no public authority could hope to escape, and that was occasional Acts which were mistakes, or which looked like mistakes. One of the mistakes a Municipal authority could least afford to commit was a mistake in the selection of a medical officer of health.

The Mayor of St. Pancras, in responding, said it was difficult to realise the importance of the position of the medical officers of health. Their duty was not only to prevent disease among those who had every possible opportunity of repelling diseases, but their mission was the still higher one to give equality of opportunity to the poor and rich alike of our great city.

In proposing "The Incorporated Society of Medical Officers of Health," Dr. Pye-Smith said it was due to their untiring efforts, prolonged for several generations now, that this country had taken the lead in all the great improvements and reformations which had turned a fever-stricken, foul, and unhealthy country into one of the most wholesome in the world.

The President, in replying to the toast, said the Society had progressed considerably. From eighty all told in the year 1870 their numbers had risen to 937, and he hoped that before his year of office was concluded they would number 1,000. A society which numbered 1,000 members was a society of some weight, especially when they remembered that the majority of those members were Fellows and acting medical officers of health. He held it to be essential that in the course of their duties they should make themselves acquainted with those branches of architectural construction which were so important at the present time, for in these days the tendency was to pack the populations of towns in a manner that was injurious to public health and led to that physical deterioration of which so much was heard. In all classes of society there was this tendency to overcrowd, and the medical profession should join hands with architects and agree among themselves as to the limits of aggregation of population. There was a limit beyond which we could not go without danger to the health of the whole community. We do not want to be decimated by disease; that sort of thing happened in days long past, and it would be a general discredit if it were to happen again.

Dr. W. H. Roberts, President of the Metropolitan branch, and Dr. E. Davis, President of the Western branch, also responded.

Dr. Grove, J.P., then proposed the toast of "Other Kindred Societies," and in response Mr. Andrew Clark said the British Medical Association were endeavouring to forward a Bill in Parliament to get rid of the insecurity of tenure of office of which medical officers complained, and he hoped that during the coming session that Bill would become law, and medical officers would no longer be under liability to removal from office in consequence of doing what they considered to be their public duty. The matter not only concerned medical officers of health; it seriously affected sanitary inspectors.

Other toasts were "Our Guests," proposed by the Chairman and acknowledged by Mr. Cutler and Dr. Beaton, and "The Officers," proposed by Dr. Newsholme, F.R.C.P.

LECTURE HALL, SOLDIERS' HOME, SPITAL TONGUES, NEAR NEWCASTLE-ON-TYNE.—A new lecture hall has been provided at this building, to seat 300 people. In the side overlooking the grounds in Hunter's-road, two stained-glass windows have been provided by Sir Henry H. Scott, illustrating Tennyson's "Idylls of the King and the Holy Grail." The wall behind the platform is prepared as a lantern screen. The old lecture hall has been divided by a passage-way leading to the new hall; and two rooms have been made in the area, one for billiards and the other for devotional meetings. The building was designed by Mr. J. W. Taylor, and has been erected by Mr. Craven, of Newcastle. The exterior is of red brick, with a square tower.

Illustrations.

TOWER, ST. JOHN'S, COWLEY.

THE Church of St. John at Cowley, Oxford, has recently been completed as regards the interior by the building of a tower at the west end, as shown by the illustration.

The tower is large, being the full width of the nave. It is of low, massive proportions. Like the rest of the church it is simple, and, indeed, severe in character, as was especially desired by the Cowley Fathers, for whom the church was built.

It is entirely of Bath stone ashlar externally. Internally the wide space of this tower adds considerably to the effect of the building. The church and tower are the design of Mr. G. F. Bodley, R.A.

REREDOS, ALL SAINTS, MAIDSTONE.

THE scheme of the reredos is suggested by the "Te Deum." It is divided into three main compartments, the centre of which contains a panel representing Our Lord in glory surrounded by adoring angels. The two side compartments contain each two panels, those on one side representing Apostles and martyrs, and on the other prophets and the Holy Church. The main compartments are divided and flanked by clustered pinnacles with niches containing figures representative of the English Church. The whole is surmounted by a group of angels.

The work has been carried out by Mr. N. Hitch in Chilmark stone, from the design and under the direction of Mr. F. L. Pearson.

ENGLISH CHURCH, ENTEBBE, UGANDA.

THIS church was designed for the purposes of the English officials and community at Entebbe, the seat of the British Government in Uganda.

The only materials available are sun-dried local bricks, with a small quantity of kiln-burnt bricks and tiles which have to be imported. The timber is cut and worked locally.

After the working drawings had been prepared and forwarded the prevalence of the "sleeping sickness" caused a postponement of the commencement of operations until the advisability of continuing Entebbe as the seat of the Government had been determined.

The drawings exhibited at the Royal Academy this year, and now published, are the working drawings. Professor Beresford Pite is the architect.

HOUSE, "GWYSANEY"; AND SCHOOLS AT KNOWLE (BRISTOL).

THESE two illustrations are from the drawings of two architects no longer living, Mr. Arthur Baker and Mr. J. D. Sedding. They were awaiting publication at the time of the lamented decease of their respective authors, and were put aside at the time; but though we have consequently no information about them beyond that conveyed in the drawings, we give them as a memorial of men whose work was much valued.

Judging from the brief inscription over the plan, Mr. Baker's drawing appears to have been a restoration of an old house from sketches and from the portions remaining.

NEW CO-OPERATIVE PREMISES, OLDHAM.—The new central premises of the Oldham Co-operative Society at Greenacres Hill were recently opened. The work has been carried out from plans prepared by Mr. T. Taylor, architect.

LOT'S EYOT, KEW.—We recently commented upon the intention of a firm of barge builders and repairers to build a large covered dock, for their business, on the island which lies between Kew Gardens and Brentford. The Board of Trade, as custodians of the foreshore, have refused to sanction the proposal of the Thames Conservancy to grant their licence for the construction of the covered dock. But it appears that the refusal does not inhibit the projectors from building upon the Eyot, which is their own property, but only prevents them from reclaiming the foreshore in its vicinity. So some danger remains that the natural beauties of the river at that spot will, in the end, suffer more damage than might have ensued if the Conservators' consent had been obtained, for it enforced certain restrictions as to building works which now no longer obtain.

New Tower Church of St John
Cowley Oxford.
G.F. Bodley R.A.

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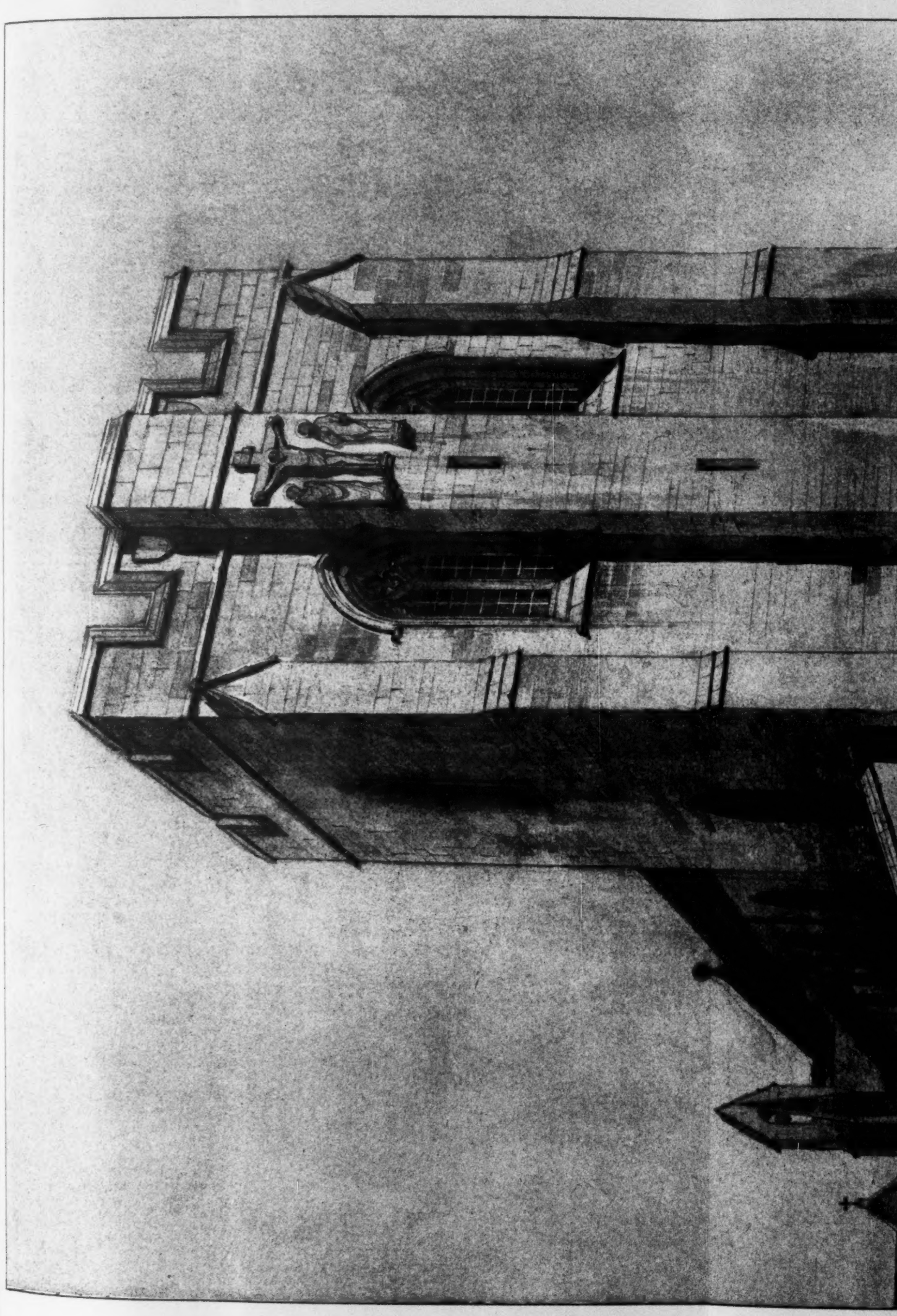

THE BUILDER, OCTOBER 22, 1904.

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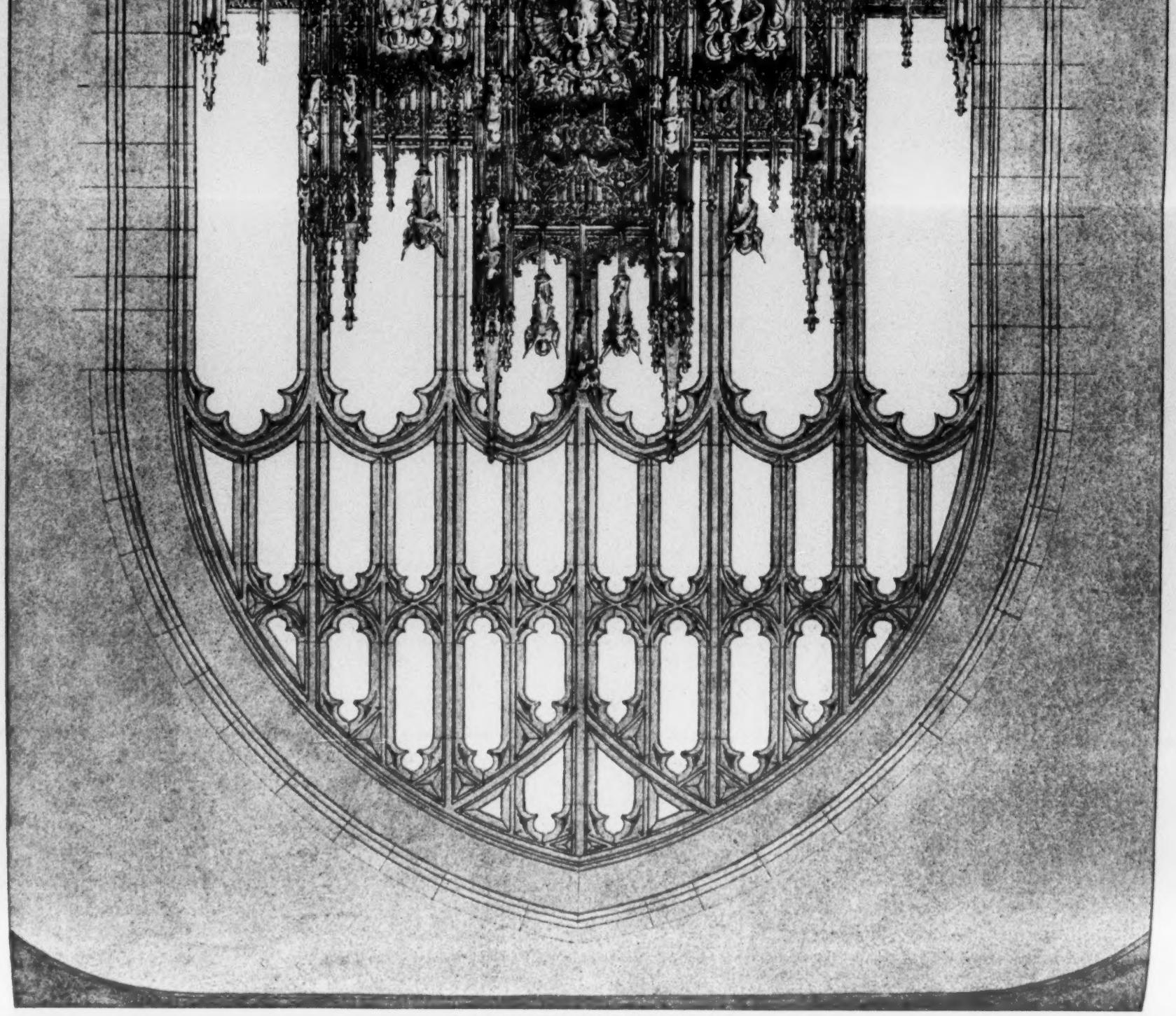

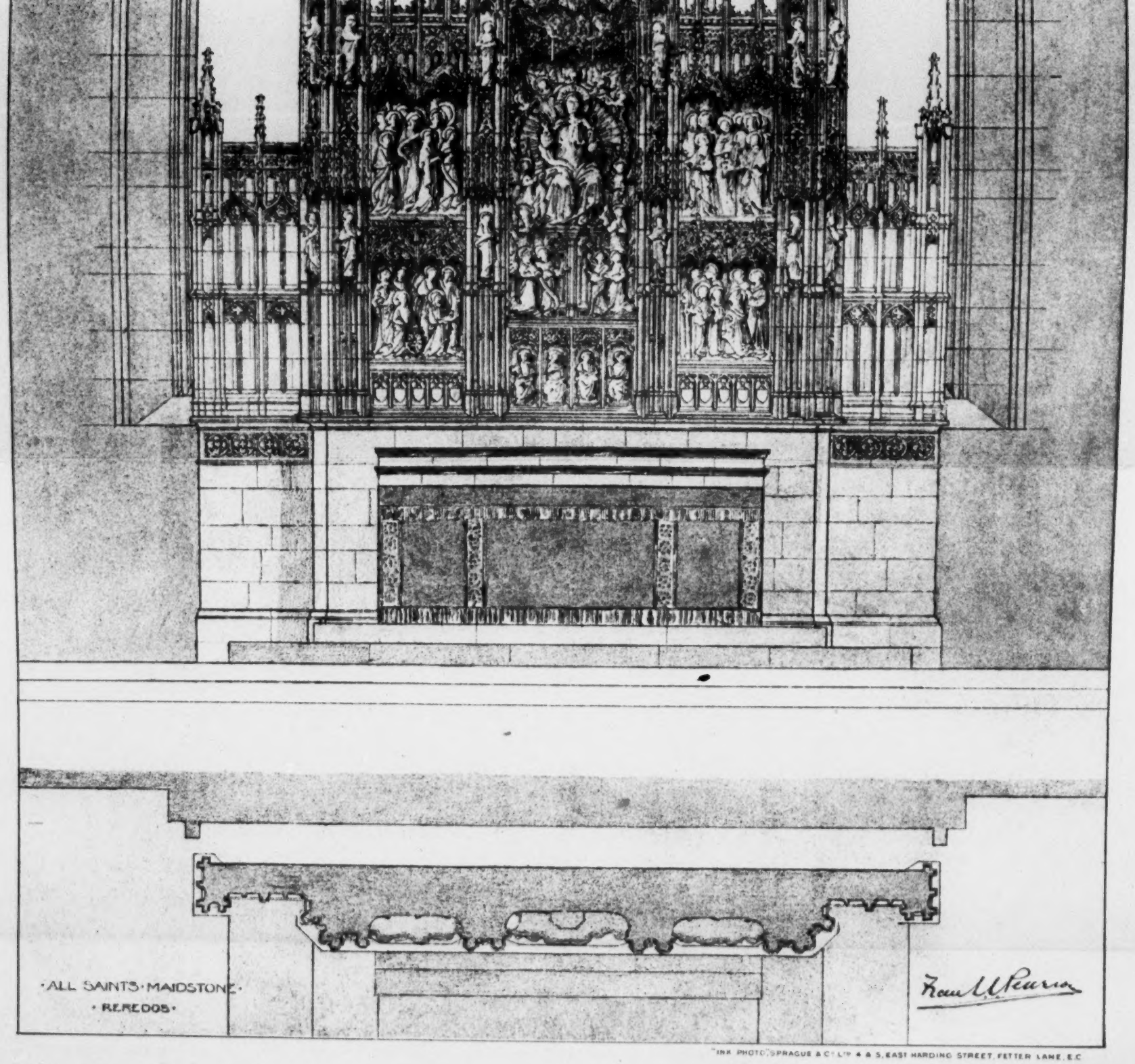

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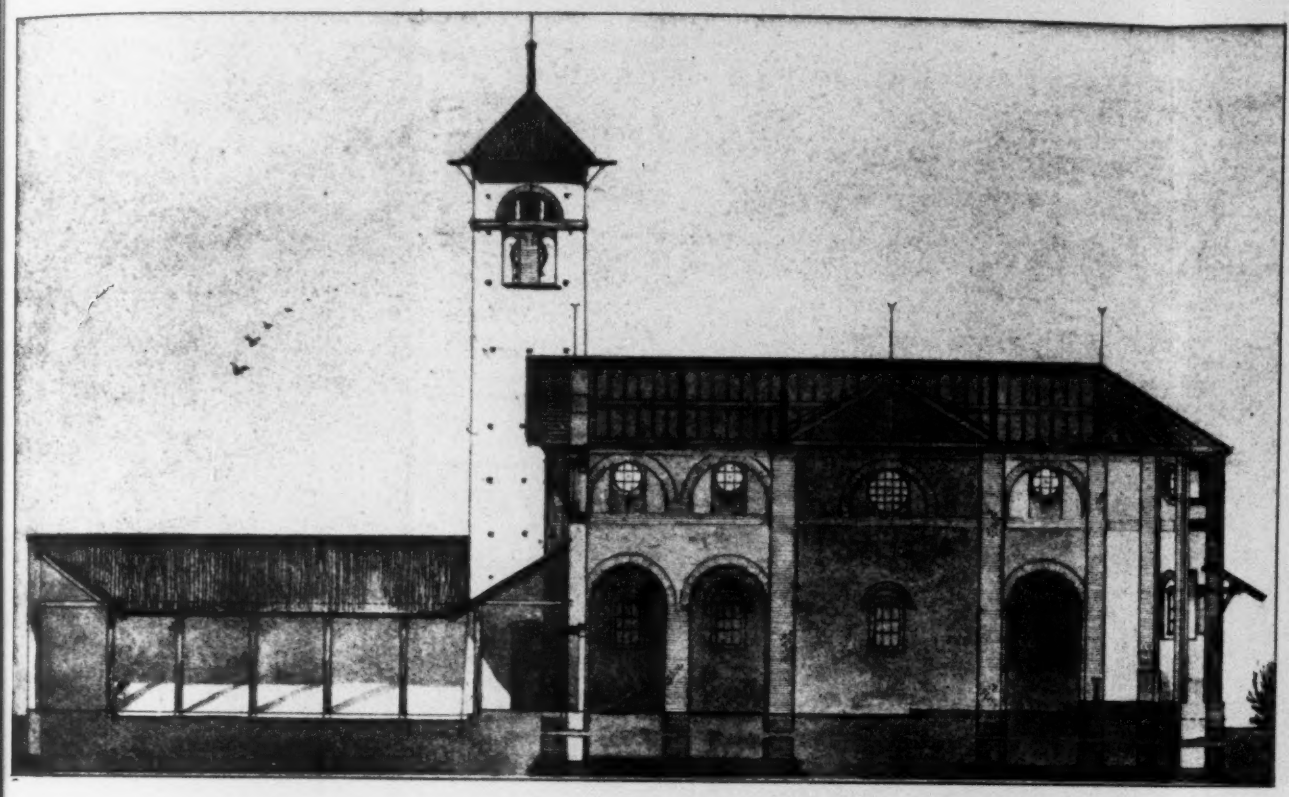

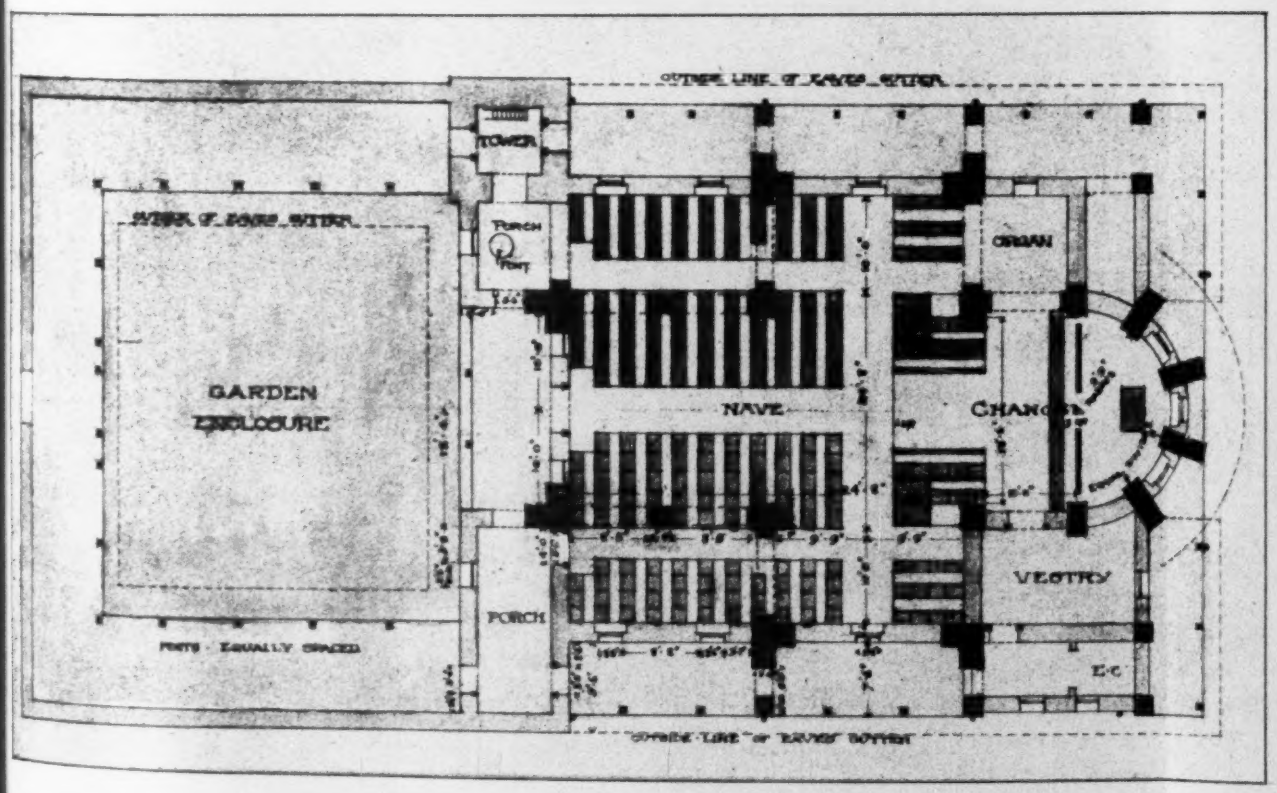
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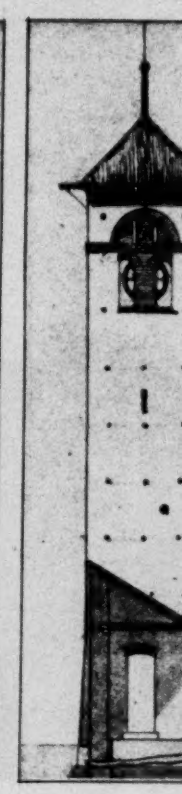

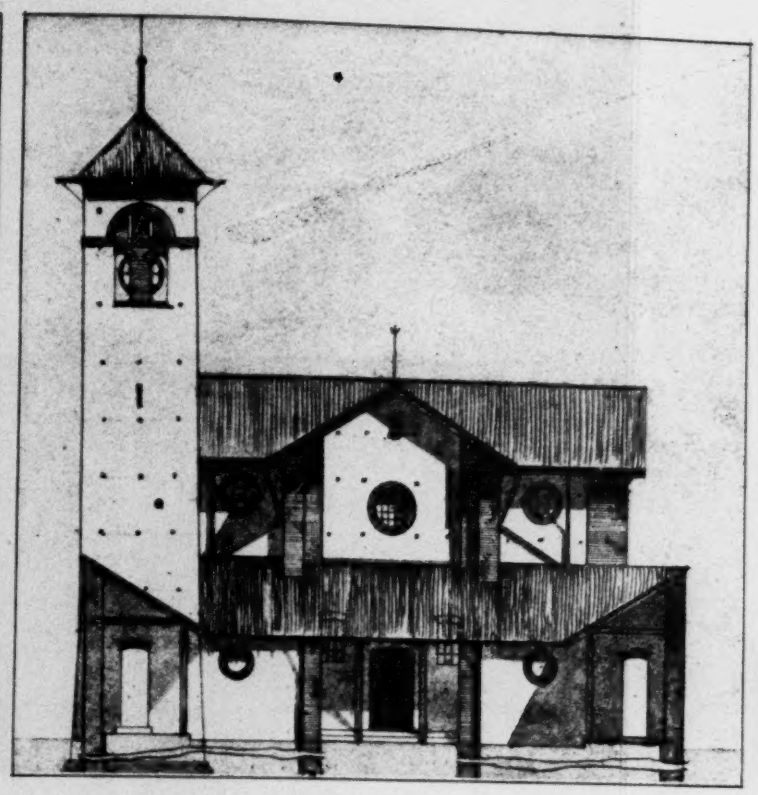

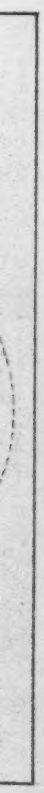

DESIGN for
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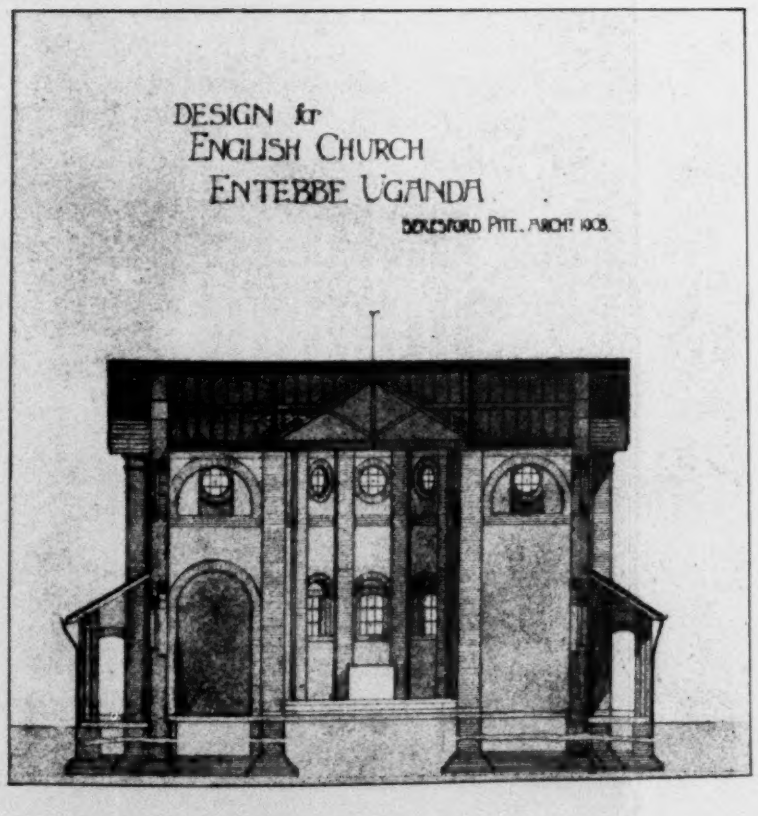

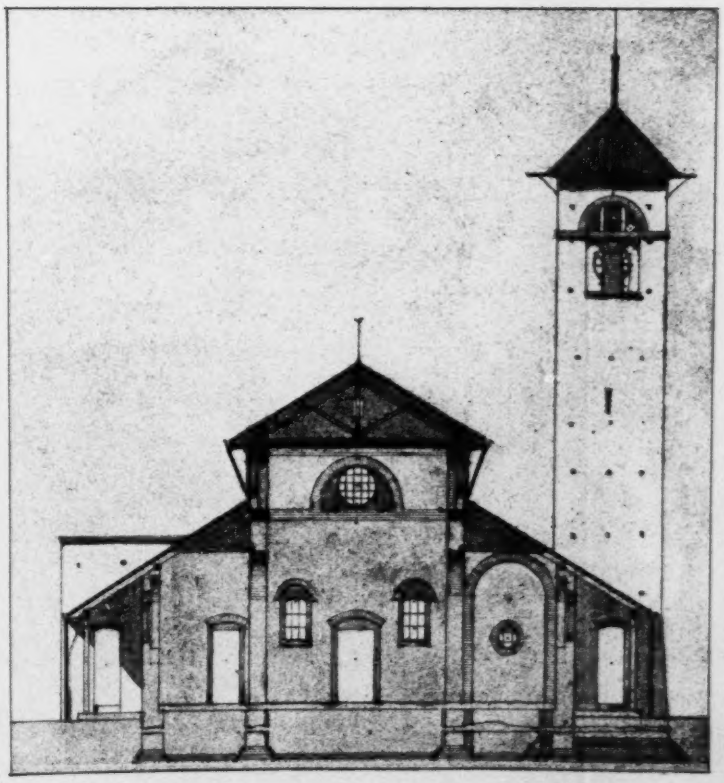

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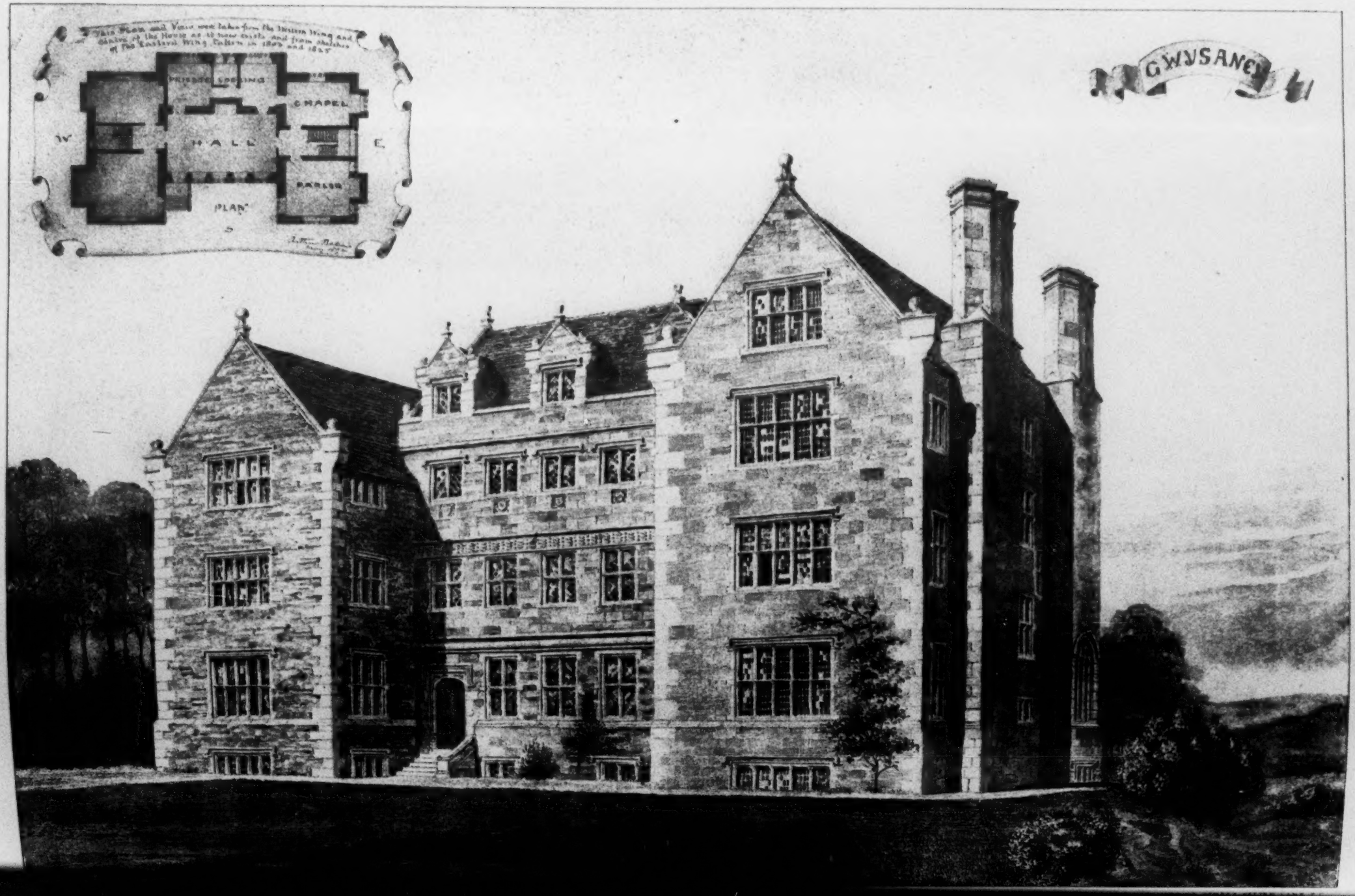
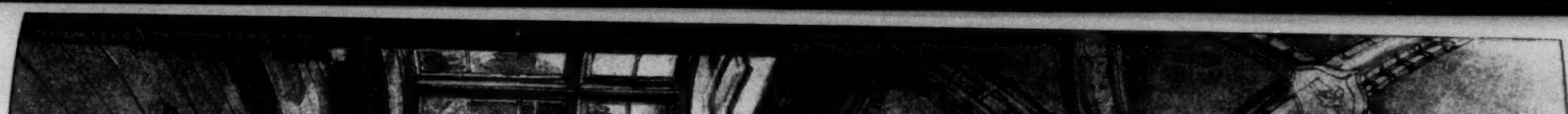
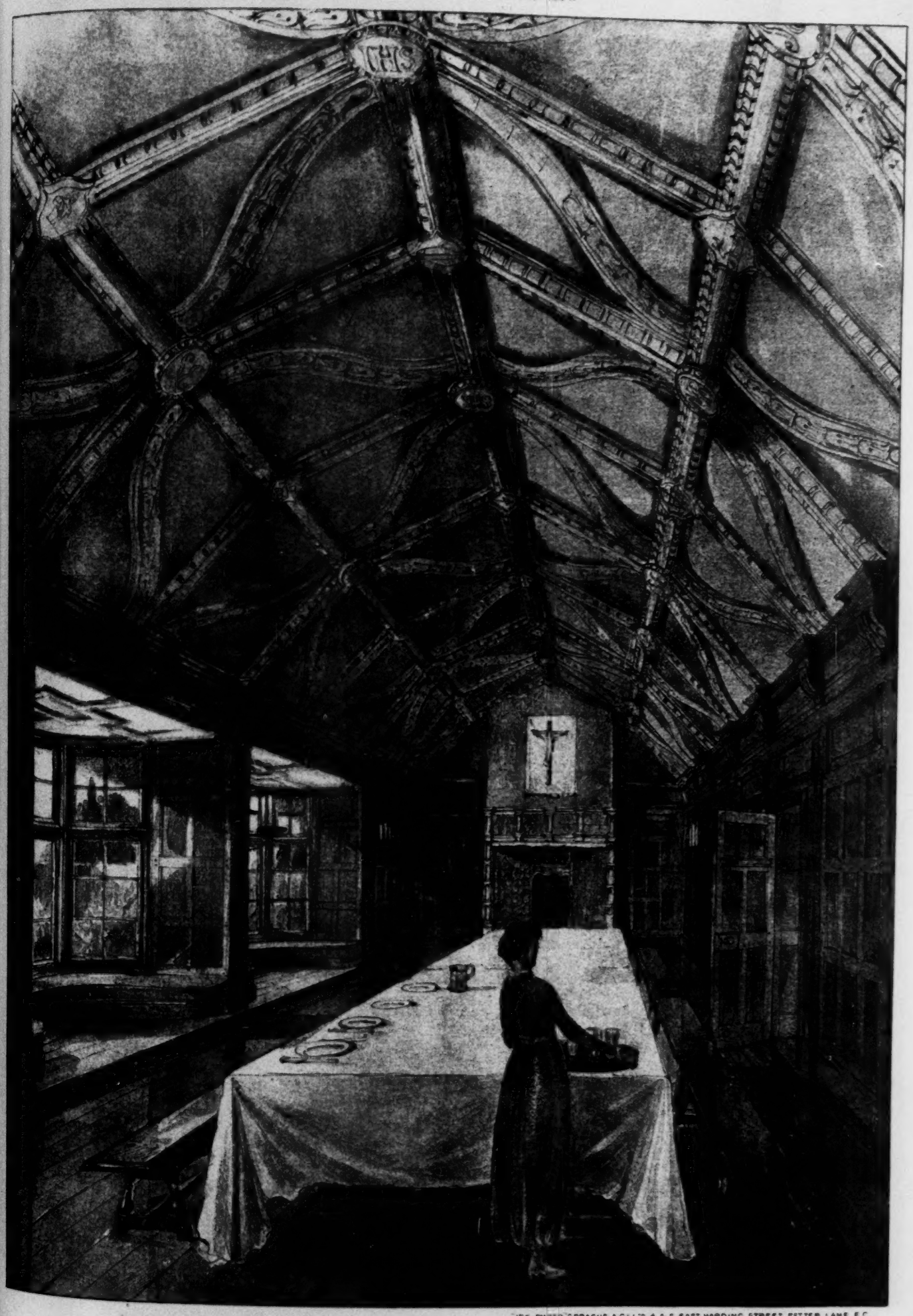
GWYSANEY



SCHOOLS AT BRIGHTON.





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SCHOOLS AT KNOWLE, BRISTOL: INTERIOR VIEW OF REFECTORY.—THE LATE JOHN D. SEDDING, ARCHITECT.

THE INSTITUTE OF BUILDERS:
ANNUAL DINNER.

THE annual dinner of the Institute of Builders was held on Wednesday in the Whitehall Rooms, Hôtel Métropole, W.C., Mr. C. H. Barnsley, President, presiding. There were also present Mr. John Belcher, A.R.A., President of the Royal Institute of British Architects; Mr. H. T. Steward, President of the Surveyors' Institution; Mr. E. Guy Dawber, President of the Architectural Association; Mr. J. Carmichael, President of the London Master Builders' Association; Mr. F. A. Crisp, Master of the Carpenters' Company; Mr. G. J. Newson, Master of the Tylers' and Bricklayers' Company; Colonel G. Haward Trollope, V.D., Colonel J. Barnsley, V.D., and Messrs. E. W. Barnsley, H. H. Bartlett, J. Bell, J.P., J. Howard Colls, Max Clarke, F. L. Dove, Basil P. Ellis, A. R. G. Fenning, T. Gregory, Benjamin I. Greenwood, Woodman Hill, F. B. Hollis, W. J. Hardcastle, G. W. Humphreys, H. H. Holliday, T. Holloway, W. Higgs, J. A. S. Hassall, A. Harrison, W. F. King, Walter Lawrance, W. J. Locke, F. M. May, F. G. Minter, R. W. Neill, J.P., W. Nicholson, Rowland Plumbe, H. Carter Pegg, A. E. Parker, Joseph Randall, E. R. Robson, T. F. Rider, W. Shepherd, E. Selby, C. J. Smithem, W. W. Thomas, E. J. Turnbull, A. W. Turnbull, T. B. Whinney, C. Wall, J. Sharman Wood, W. F. Wallis, Morgan H. Young, T. Costigan (secretary), and others.

The loyal and patriotic toasts having been honoured (Mr. T. F. Rider proposing, and Colonel G. Haward Trollope responding to, the toast of the "Imperial Forces"),

Mr. F. A. Crisp proposed "The Institute of Builders and its President." He referred to the intimate association between the Carpenters' Company and the Institute of Builders, and said that the objects of the Institute were so numerous and their field was so wide that the Institute could not fail to commend itself to all those who were connected in any way with the building trade.

The President, in reply, said the Institute was formed for the benefit not only of the London builders but of all those engaged in the building trades throughout the United Kingdom, and he thought that his position that evening should remove any idea that there was any desire on the part of his London colleagues for the consideration of their exclusive interests therein. The Institute was the trunk, and it was the wish of the provinces to become important branches. The objects of the promoters of the Institute were, among other matters: the mutual and general benefit of its members and of all those who were engaged as builders in the country; to protect the highest interests and welfare of a great and ancient industry, and further to exercise surveillance over matters which from any source might be detrimental to the welfare of the building trade. The existence of the Institute had been justified in many ways, and it was never needed more than at the present time, when there exists such a desire by public bodies to municipalise the trade of the country. Such a desire he regarded as an evil, and it was very necessary to be thoroughly alert and carefully to guard their interests in the matter. If they did not do so in the initial stages of the movement it would become a much more serious matter in the future. He wondered how this tendency could be justified; if it could be shown that the work which was undertaken by municipalities was done better or cheaper than by private enterprise there might be some reason for it, but experience showed that work was much more costly when executed by a public body, and that being so he was sure that the Institute would welcome the co-operation of architects and surveyors and of others in checking such action. The Institute was seeking to use its influence in removing, or in seeking to mitigate, the growing and arbitrary restrictions which were contained in the building by-laws of local bodies and district councils. This was a very important matter. These by-laws cause irritation, and militated against the interests of all concerned, and were responsible to a large extent for the costly execution of many important contracts. Before concluding his remarks, he would briefly refer to a matter which was exciting a good deal of controversy just now regarding the actions and the character of working men. As the builders of this country employ by far the largest proportion of working men, he thought they were well fitted to express some opinion in the matter, though he did not desire to add any fuel to the fire. Trades unionism was a necessary thing, and in many ways it could be justified; but when it did not inspire workmen to be anything but slothful in business, or when it in any way justified his limitation of output and energy—in effect, to give as little as he could for his money, and consequently lowered his ideal to the standard of least efficiency, thus crushing out his individuality and the opportunity for the development of everything which was best in man—then it became a curse to the country, and its actions demanded to be made public. We were told that work is only well done when done with a will, and he thought that many would agree that that was where the working men of this country were lacking—they were lacking in will and in interest in their work. It had been well said by Emerson that:—

> "He who worketh high and wise,
> Nor pauses in his plan,
> Will take the sun out of the skies
> Ere freedom out of man."

The fault he had been referring to did not, in his opinion, rest with the workmen in general; very many of them were true characters, and to know them was to respect them; the fault was largely the workman in his official capacity, and the great trouble which all of them experienced more or less was with the officials of the unions. Officially, the working men were doing themselves a great deal of harm. All employers desired to work harmoniously with their men, and, generally speaking, and especially lately, they did so; and all they asked was that they got a fair return for the outlay. In conclusion, the President referred to the work of their Secretary, Mr. Costigan, which, he said, the Institute greatly appreciated. They greatly admired their Secretary's unfailing energy in anything he could do to forward their interests.

Mr. W. F. King, past President, then proposed "The Architects and Surveyors." As builders, they desired to congratulate the architects on the honourable position to which the profession had attained within living memory. Remembering the character and attainments of the men who had honoured them on such occasions as the present, it was no wonder that the profession had attained to its present position; it would be a matter for wonder if it had not. As to the surveyors, they knew them as men who did their duty without fear and without favour. With the toast he coupled the name of Mr. John Belcher, A.R.A., President of the Royal Institute of British Architects, and Mr. H. T. Steward, President of the Surveyors' Institution.

Mr. Belcher, in response, said that architects were dependent on builders for the realisation of their dreams. Architects recognised that in the evolution of their calling builders preceded architects, and that their business was to build well, as they generally succeeded in doing; but subsequently there rose up a new race, which they knew as the jerry-builder, and then, it was said, the architect came into existence because of the transgressions of the builder, and he acted as a sort of building inspector and policeman. There was a little experience of his own he might mention. When he was very young he thought he would do everything himself, even to settling the builders' accounts—he left that to the quantity surveyor now—and he called the builders' attention to one item, which was obviously two-thirds more in quantity than it should be, and outrageously high in price. The builder was an old man, and he said:—"It is on account of your youth and inexperience that you have made this great mistake, for you have not taken into consideration the many points which, as a builder, I am bound to take into consideration, and which have caused this to be rather high priced; but it is not possible to reduce it." The matter was argued at length, and suddenly the builder gave in and reduced the item at least two-thirds. Some time afterwards he saw the same builder about another job, which he (the speaker) had been able to obtain for him because of the builder's consideration for him, and he asked the builder to be careful about his account, and, remembering the little incident he had referred to, that his prices should be moderate. The builder smiled, and said: "Well, I'll tell you how that happened with you. I knew you were a young man, and that you would be glad to point out to your client how much you had been able to reduce the rascally builder's account. Moreover, I always make a similar account, because I find that the architect is so much engaged with this particular item that he always neglects to look at the others." That was ancient history, and things were not done like that now, and architects and builders understood one another better, and they regarded one another with proper respect. Architects were grateful to builders for their care and attention in carrying out designs, and they acknowledged that the interests of those engaged in the building trade were considered and advanced by them. He might speak of one of their members—*i.e.*, Mr. Howard Colls, a gentleman of light and leading, to whom they all owed a great debt of gratitude for his pluck in resisting the terrors of light and air claims; who, by his appeal to the House of Lords, had obtained a judgment which had placed the whole matter on a proper footing. He hoped that between architects and builder there would always be mutual consideration, respect, trust, and confidence, so that in carrying out work it might be brought to a successful and perfect finish.

Mr. Steward, in responding for the surveyors, said that the profession of surveyor was a very comprehensive one, but in his own case he had been somewhat intimately connected with the trade of builders and contractors for a period extending over very nearly half a century. In his opinion the builders and architects of the present day were very worthy successors of the eminent men of the past generation. He feared that the building trade was suffering in conjunction with other businesses in the general depression of the trade of the country. From his experience, the building trade was one which was the last to feel, but was the last to recover from, bad times, and though some with whom he had been speaking on the subject lately were disposed to think that the building trade would never be what it had been, he ventured to predict that history would repeat itself, and that when the trade of the country had generally recovered, soon afterwards the building trade would be going again with all its force and power, and that there would be, as there had been after every depression he could think of, new and profitable channels for its enterprise. There was a close connexion between builders and surveyors—not only in that good and bad times affected them alike, but in the friendly intercourse and respect and confidence which must exist between them, and he trusted that as between the Institute of Builders and the Surveyors' Institution that good feeling would be maintained and strengthened in the future.

Mr. Neill then suitably proposed "The Visitors," coupled with the names of Mr. G. J. Newson, Master of the Worshipful Company of Tylers and Bricklayers, and Mr. Thomas.

These gentlemen having replied, the proceedings then terminated.

USE OF ELECTRICITY IN FACTORIES.

THE Home Office is about to issue the following draft Regulations to be observed in the use of electricity in factories and other places under section 79 of the Factory and Workshop Act, 1901:—

"DRAFT REGULATIONS FOR THE USE OF ELECTRICITY IN FACTORIES AND OTHER PLACES UNDER THE FACTORY AND WORKSHOP ACT, 1901.

"Whereas the generation, transformation and use of electricity in electrical stations and in any factory, workshop, dock, wharf, quay, warehouse, or other place to which section 79 of the Factory and Workshop Act, 1901, is applied by that Act has been certified in pursuance of the said section 79 to be dangerous:—

"I hereby in pursuance of the powers conferred upon me by that Act make the following Regulations, and direct that they shall apply to all places named above, other than electrical stations, in respect of the distribution and use of electricity where the normal working pressure is greater than 250 volts and less than 650 volts between any two conductors:—

"1. All wires in connexion with the supply shall, where practicable, be completely enclosed in strong metal casing, and where this is not practicable they shall be so arranged that there shall be no danger of any shock or of fire.

"2. All main and branch circuits shall be protected by switches and by fuses or other automatic cut-outs.

"3. The supply to every motor or arc lamp shall be controlled by means of an efficient switch, so placed as to be easily handled by the person in charge of the motor or arc lighting, and connected so that by its means all pressure can be cut off from the motor or arc lamp and from any regulating switch resistance or other device in connexion therewith: provided, however, that where the arc lamps are connected in series across the outer conductors of a three-wire system and the pressure cannot exceed 250 volts from earth, it shall be sufficient if one

such switch be provided for each series of arc lamps.

"4. All switches and cut-outs shall be so enclosed and protected or be in such positions or of such construction that there shall be no danger of any shock being obtained in the ordinary handling thereof, or of any fire being caused by their normal or abnormal action.

"5. All metal holders for incandescent lamps, the frames of all motors, and the metal casings of all wires, switches, fuses and cut-outs, shall be efficiently connected with earth.

"6. Where the electricity is derived from a public supply the following conditions shall be observed:—

"(*a*) A suitable safety fuse or other automatic cut-out shall be inserted in each service line, as close as possible to the point of entry into the premises, and contained within a suitable locked or sealed receptacle of fire-proof construction, except in cases where the service line is protected by fuses in a street box, but no fuse or cut-out shall be inserted in the intermediate conductor of a three-wire system.

"(*b*) All service lines and apparatus shall be highly insulated and thoroughly protected against injury to the insulation and against access of moisture, and any metal forming part of the electric circuit shall not, unless efficiently connected with earth, be exposed so that it can be touched. All electric conductors shall be so fixed and protected as to be free from risk of electrical discharge to any adjacent metallic substance.

"Provided that in regard to service lines and apparatus under the sole control of a person other than the occupier of the premises to which the supply is given it shall be a sufficient compliance with Regulation 6 on the part of such occupier if he obtains from such person in the month of January in each year a certificate that the Regulation is fully observed in regard to the said service lines and apparatus. Such certificate shall be produced at any time when required by H.M. Inspectors of Factories.

"These Regulations shall come into force on January 1, 1905.

"Home Office,
"Whitehall, 1904."

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring-gardens, S.W., Mr. J. Williams Benn, M.P., presiding.

Loans.—On the recommendation of the Finance Committee, it was agreed to lend Battersea Borough Council, 10,637*l.* for paving works; Islington Guardians, 6,500*l.* for poor law purposes; Kensington Borough Council, 9,525*l.* for paving works; and Stepney Borough Council, 2,150*l.* for street improvements.

The Port of London.—The Rivers Committee recommended that:—"Notice be given by public advertisement of the intention of the Council to consider at its meeting on November 8, 1904, a proposal that it shall take the necessary measures for promoting in the next session of Parliament a Bill for and relative to the transfer to a public authority to be constituted by the Bill of the undertakings of the London and India Docks Company, the Surrey Commercial Dock Company, and the Millwall Dock Company, and of the powers, rights, duties, property, and liabilities, or some of them, of the Conservators of the River Thames, and of the Master Wardens and Commonalty of Watermen and Lightermen of the River Thames, commonly called the Watermen's Company, and of the Court of Master Wardens and Assistants of the Watermen's Company, and for conferring on such public authority various rights and powers for the management of the undertakings proposed to be transferred, and of the Port and Docks of London and any other matters proposed to be transferred or vested in such public authority under the Bill, and for making the necessary financial provisions in connexion therewith, and for defining the Port of London for the purposes of the Bill."

The recommendation was adopted.

Housing of the Working Classes.—Mr. Bruce, the Chairman of the Housing of the Working Classes Committee, informed the Council that accommodation had been provided during the last six months for 3,602 persons of the working classes.

Main Drainage Extension: Southern Outfall and High Level Sewers.—The Main Drainage Committee reported that they had considered tenders for the construction at Plumstead of a portion of the new southern outfall sewer No. 2, and of a portion of the new high-level sewer No. 2. The following are the tenders:—

J. Smith & Co.	£119,136	14	10
J. Watt	115,815	3	6
S. Pearson & Son	114,010	1	3
Price & Reeves	113,946	12	9
R. McAlpine & Sons	107,440	8	0
Bentley & Lock	102,474	13	4
A. N. Coles	93,661	4	8
J. Bentley	93,157	17	5
J. & T. Binns	92,455	19	1
J. Mowlem & Co.	86,007	16	6
J. R. Squire & Co.	85,711	12	3
W. Kennedy, Ltd.	84,607	15	9
Muirhead, Greig, & Matthews	83,306	15	7
J. Cochrane & Sons	82,344	7	8
Westminster Construction Co., London*	81,285	19	0
J. D. Nowell & Son	68,377	17	7

[Chief engineer's estimate of the cost of the work was £91,727 7s. 2d.]

Sir W. Collins said he thought some explanation should be given as to why the lowest tender had been passed over, especially as Messrs. Nowell were already carrying out a contract for the Council.

Colonel Rotton moved that the recommendation be referred back, and stated that, if they were to give up accepting the lowest tenders, they might just as well give up calling for tenders.

Mr. Harris wanted to know why the job had not been offered to the Works Department, who would, of course, be able to do it cheaper than contractors.

Mr. Ward urged the Council to adopt the Committee's recommendation, on the ground that next week the Committee would propose that Messrs. Nowell should be given another job.

Mr. McKinnon Wood considered that there should be some very strong reason given why the lowest tender should be passed over.

Mr. Goodman, the Chairman of the Committee, said the engineer had advised that the job was a very difficult one, and the Council must take upon itself the responsibility of interfering with the Committee's recommendation.

The amendment was, however, carried, and the matter was referred back.

The Council, having transacted other business, adjourned.

APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

THE London County Council at their meeting on Tuesday dealt with the following applications under the London Building Act, 1894. The names of applicants are given between parentheses:—

Lines of Frontage and Projections.

Kensington, South.—Retention of an iron and glass covered-way in front of No. 20, Bolton-gardens, Wetherby-road, South Kensington (Mr. W. Hancock).—Consent.

St. George, Hanover-square.†—Buildings upon the site of Nos. 44, 45, and 46, Old Bond-street, and Nos. 57, 58, 59, and 60, Piccadilly, St. George, Hanover-square, of projecting shop fronts and two three-story oriel windows on the Bond-street frontage, and projecting shop fronts, balconies at the second and third floor levels, and three-story oriel windows on the Piccadilly frontage (Messrs. Read and MacDonald for Messrs. Callard, Stewart, and Watt, Ltd.).—Consent.

Fulham.—The retention of projecting porches and balconies at Nos. 2 to 48, Finlay-street, Fulham (Mr. R. B. Mason).—Consent.

Fulham.—The retention of projecting porches and balconies at Nos. 1 to 47, Finlay-street, Fulham (Mr. H. Terry).—Consent.

Greenwich.—Buildings on the southern side of Kidbrooke-gardens, Kidbrooke-grove, Blackheath (Mr. A. Mitchell Torrance for Sir John McDougall).—Consent.

Hampstead.—An iron and glass shelter at the front entrance to "Eagle's Nest," Haverstock-hill, Hampstead, an iron and glass shelter at the side entrance in Englands-lane, and an iron and glass roof in front of the coach-house at the rear of the building (Mr. L. Sharp for Mr. G. Munro).—Consent.

Marylebone, East.†—A projecting clock in front of No. 188, Oxford-street, St. Marylebone (Mr. C. H. Mead for the Alexander Clark Manufacturing Company).—Consent.

Paddington, South.—An addition to the existing one-story shop at No. 95, Westbourne-grove, Paddington, to abut upon Monmouth-road (Mr. G. Neal for Mr. J. Harries).—Consent.

Southwark, West.—A two-story building, and the raising of a boundary wall on the south side of Southwark-street, Southwark (Mr. J. T. Woodard for "Chocolate Menier").—Consent.

Wandsworth.—A projecting angle buttress to No. 10, Balham-park-road, Balham (Mr. B. H. Tarrant for Mr. W. Borders).—Consent.

Wandsworth.—Houses on the north side of Church-lane, Tooting (Mr. W. Bartholomew).—Consent.

Holborn.—An open letter sign at No. 71, High Holborn (Mr. L. Freedman).—Consent.

Hampstead.†—Enclosures to the porch at No. 25, Langland-gardens, Hampstead (Mr. J. D. Hunter for Mr. A. Drew).—Consent.

Hammersmith.†—Certain woodwork in the erection of bay windows at the "Lord Nelson" beer-house, Masbro'-road, Hammersmith (Messrs. N. Parr and A. E. Kates for the Royal Brewery, Brentford, Ltd.).—Refused.

Hammersmith.—Retention of a wood and glass showcase at No. 248, King-street, Hammersmith, abutting upon Ravenscourt-avenue (Mr. G. Trotman for Messrs. Kennedy and Clarke).—Refused.

Marylebone, East.—A porch and an iron and glass enclosure to the area steps at No. 8, Cavendish-square, St. Marylebone, to abut upon Cavendish-place (Mr. W. H. White for Dr. H. Morris).—Refused.

Width of Way.

Hackney, Central.—That the application of Mr. G. H. Lovegrove for Messrs. J. King and Co., Ltd., for an extension of the period within which the erection of a warehouse building on the site of Nos. 74 and 76, De Beauvoir-crescent, Kingsland, with external walls at less than the prescribed distance from the centre of the roadway of Hertford-road, was required to be commenced and completed, be granted.—Consent.

Hackney, North.—A building on the west side of a roadway leading out of the north side of Farleigh-road, Hackney, between Nos. 3 and 5 (Mr. G. H. Capper for Mr. A. C. Jackson).—Refused.

Width of Way and Lines of Frontage.

Greenwich.—A one-story addition to a coach-house and stable building at the rear of No. 1, Shooter's-hill-road, Blackheath, to abut upon Vanbrugh-terrace, and the mews leading therefrom (Mr. A. W. Watkins for Mr. F. Wissler).—Consent.

City.—A building on the site of Nos. 4 and 6, Copthall-avenue, City (Messrs. E. Runtz and Ford for Messrs. J. Chessum and Sons).—Consent.

Hammersmith.—A parish hall, on the south side of Great-church-lane, Hammersmith (Mr. W. D. Caröe for Rev. J. Parry).—Refused.

Width of Way, Line of Frontage and Construction.

Hammersmith.—A gangway over Wood-lane, Hammersmith (Mr. I. Kiralfy for the British Empire Exhibition).—Consent.

Hoxton.—Iron balconies connecting premises at Merritt's-buildings and Clifton-street, Hoxton (Messrs. Gale, Durlacher, and Emmett for the Home and Colonial Stores, Ltd.).—Consent.

Lines of Frontage and Deviation from Certified Plans.

Strand.—Buildings upon the site of Nos. 36 and 36a, St. James'-street, and 64, Jermyn-street, St. James' (Mr. W. Woodward for Mr. L. Thomas).—Refused.

Space at Rear.

St. George, Hanover-square.—Deviations from the plan certified by the District Surveyor so far as relates to the proposed erection upon the site of No. 23, Bolton-street, of an addition to the Curzon Hotel, Curzon-street, Mayfair (Messrs. S. J. Waring and Son).—Consent.

Formation of Streets.

Hampstead.—A deviation from the plans sanctioned on September 3, 1903, for the formation or laying-out of new streets for carriage traffic upon the Burgess Park-estate, Finchley-road, Hampstead, so far as relates to an alteration in the gradients in certain of the streets (Messrs. Brown and Barrow).—Consent.

Cubical Extent.

Hammersmith.—A subway being formed at the basement level to connect blocks Nos. 2 and 5 at the Manbré Saccharine Works, Brandenburgh-road, Fulham (the Manbré Saccharine Company, Ltd.).—Consent.

Southwark, West.—Additions to a building on a site on the east side of Hatfield-street, Southwark (Messrs. F. Matcham and Co. for Messrs. Hudson and Kearns).—Consent.

The recommendations marked † are contrary to the views of the local authority.

ARCHITECTURAL SOCIETIES.

ROYAL INSTITUTE OF ARCHITECTS OF IRELAND.—A general meeting of members was held in the Institute Rooms, 20, Lincoln-place, Dublin. Mr. George C. Ashlin, President, occupied the chair. A letter was read from Mr. Pinkerton, Londonderry, having reference to the existing schedule of professional charges and suggesting some alterations in it. The Chairman explained that the meeting was not competent to adopt any resolution relative to such proposed change, but invited a general consideration of the subject. An animated discussion followed in which Mr. James H. Webb, Mr. George L. O'Connor, Mr. Murray, Mr. Allberry, and others took part. It was alleged that the rules laid down in the Institute schedule governing architects' charges were constantly transgressed by members if not absolutely in letter, at any rate in spirit. The speakers called upon the council to take vigorous action in this matter, and thus protect those, especially the younger architects, who were loyal to the Institute, and the best traditions of practice. The President announced that, in his opinion, the present constitution of the committee of the Royal Institute of British Architects, having charge of the proposed scheme of registration of architects gave good hope of a speedy settlement of this most important question.

COMPETITIONS.

WESLEYAN HALL, WESTMINSTER.—We are officially informed that 122 sets of plans have been received for this competition.

BOOKS RECEIVED.

DUNSTABLE: THE DOWNS AND THE DISTRICT. By Worthington G. Smith. (The Homeland Association. 1s.)

A HISTORY OF ENGLISH FURNITURE. By Percy Macquoid. Part I. (Lawrence and Bullen. 7s. 6d. each part.)

WORK AND WAGES. Part I., Foreign Competition. By Sydney J. Chapman. With an Introduction by Lord Brassey. (Longmans, Green, and Co. 1904.)

JAPANESE COLOUR PRINTS. By E. F. Strange. (Issued by the Board of Education.)

NEW STREETS: LAYING OUT AND MAKING UP. By A. Taylor Allen. (The Sanitary Publishing Co. 3s.)

Correspondence.

THE LIABILITY OF COUNCILS FOR SANITARY INSPECTORS' ERRORS.

SIR,—Your correspondent, Mr. Hudson, was too moderate in his remarks on the injustice of the decision arrived at by Judge Addison, K.C., in the case of Johnson *v.* Bermondsey Borough Council.

The general principle involved in the decision is that the accredited agent of a municipal body has power to put property owners to an indefinite expense simply if he is of opinion that the sanitary arrangements of the premises are defective; and further, should he have made a mistake, the owner must pay for it.

Irresponsible power such as this can only lead to the demoralisation of those who hold it.

J. A. GLAZIER.

GREENSTEAD CHURCH.

SIR,—The interesting article on Greenstead Church (*Builder*, October 8) suggests that the site was selected by the bearers of the remains of St. Edmund as a suitable resting-place, because it was out of the way and hidden in the woods.

My studies of the course of ancient Essex ways leads to a contrary conclusion. I am well aware, however, that one may be easily led astray, and offer my views for what they may be worth.

The Rev. J. B. Mackinlay, in his book "St. Edmund, King and Martyr," 1903, speaks of the return of the saint's remains as a "triumphant progress to Beodricsworth," and states that it was no longer necessary to keep to lanes and by-roads to avoid observation, and following, apparently, the annals of Herman, a monk of Bury, he says "the body remained [at Greenstead] for some days in order to satisfy to devotion of the faithful."

I am inclined to agree with him as to the publicity of the site, because, if I read the tracks aright, Greenstead, a not inconsiderable settlement, was situate on the King's highway from London to Suffolk and Norfolk, by no means secluded from observation, while at the period in question (A.D. 1013) Greenstead was of some importance, Ongar was of none, and was approached by a side road branching from the King's highway at Greenstead. (You may follow its course now by the pretty footpath between the two places.) Ongar, if I am right, and I judge partly by Domesday evidence, was but a poor place till Count Eustace obtained it from William I., and probably continued so till Richard de Luci made it the caput of his Honour of Ongar when he was allowed to create his great castle there in the XIIth century.

Probably the market was established by him, and gave the old, but still current, name of Chipping to the place.

I fear to make this letter too archæological for your columns, but must add that the place now called High Ongar was, and is, territorily of far more importance than Chipping Ongar, and may well have given the name to the Saxon Hundred, though not the Norman Honour.

I trust you will permit me to express my sense of the obligations to you that archæologists are under for the admirable studies of Essex churches recently published.

I. CHALKLEY GOULD.

THE STUDENT'S COLUMN.

THE Chapter XI., in our last issue, of "Notes on Portland Cement" concluded the series of articles on this subject. The "Student's Column" articles will recommence at the commencement of the next half-yearly volume with a new subject.

METROPOLITAN ASYLUMS BOARD.

THE usual fortnightly meeting of the Managers of the Metropolitan Asylums District was held on Saturday last week at the offices, Victoria Embankment.

A communication was received from the Local Government Board assenting to the alterations and additions which it is proposed to make to the Medical Superintendent's house at the North-western Hospital. The work will cost some 280*l.*

North-Eastern and North-Western Hospitals.—On the recommendation of the Finance Committee it was agreed to apply to the Local Government Board for an order authorising the Managers to incur an expenditure, not exceeding the sum of 1,120*l.*, on the erection of engineers' cottages at both of these hospitals.

Southern Hospital.—The Works Committee reported that they had approved of the proposal of the architects to construct a rain-water reservoir at this hospital to hold about 175,000 gallons, at an estimated cost of about 1,500*l.*, as against 500*l.* in the contract, which provided only for a reservoir to hold 40,000 gallons and to receive a portion only of the rain-water.

The approval of the Committee was endorsed.

Leavesden Asylum.—The Asylums Committee recommended, and it was agreed, that certain alterations to windows at this asylum should be carried out, with the idea of providing means of escape in case of fire. The number of windows to be altered is sixty-four, the estimated cost being 346*l.*

Joyce Green Smallpox Hospital.—On the recommendation of the Hospitals Committee it was agreed to carry out internal painting works at this hospital. The portions of the building to be treated are the staff blocks and the pavilions. The cost is estimated at 8,600*l.*

OBITUARY.

MR. FURSE.—We greatly regret to announce the death on Monday last, in his thirty-seventh year, of Mr. Charles Wellington Furse, A.R.A. Mr. Furse, the third son of the late Canon C. W. Furse, Archdeacon of Westminster, and of Halsden House, North Devon, was educated at Haileybury College, whence he proceeded to the Slade School, under Professor Legros, where he won the Slade Scholarship; he then went to Paris, and afterwards to Munich, where he gained the gold medal. Until the opening of the Royal Academy Exhibition in 1903 Mr. Furse was but little known beyond the limits of the New English Art Club and a comparatively small circle of fellow-artists and art-lovers. In that year he contributed portraits of Lieut.-Colonel Sir J. J. White-Jervis and Lord Charles Beresford, and the portrait-group, "The Return from the Ride," of Mr. and Mrs. Aubrey Waterfield, to which the hanging committee had accorded a well-deserved place of honour. His success on that occasion was followed by his election to the first vacant associateship of the Royal Academy. Last summer he exhibited "The Lilac Gown," a study of colour in the picture, half-length, of a lady (Miss Mabel Terry-Lewis) with a sunshade, and "Diana of the Uplands," a girl clad in a grey silk dress, which is blown by the wind, and holding two hounds by a leash, in the midst of a wild landscape, with wind-driven clouds. In last June Mr. Furse was commissioned to paint a portrait of Dr. Daniel for presentation to him in commemoration of his accession to the Provostship of Worcester College, Oxford, and was recently engaged upon a portrait, which he leaves unfinished, of Mr. Joseph Chamberlain, M.P. Four years ago Mr. Furse married a daughter of Mr. John Addington Symonds, of Clifton Hill House, Bristol, whose likeness is depicted in "Diana of the Uplands." Of his other principal works should be mentioned a half-sized equestrian portrait of Field-Marshal Lord Roberts; the presentation portrait of Professor Skeat; and a portrait of the late Bishop Stubbs.

MR. DAVISON.—The death has just taken place at St. Peter's Hospital, London, of Mr. Thomas Vincent Davison, C.E., from the effects of a painful operation after much suffering. Mr. Davison was the late Borough Surveyor of Windsor, to which post he was appointed in March, 1871, by the Town Council. In March, 1897, he retired from the Borough Surveyorship and retained the appointments of Inspector of weights and measures, foods and drugs, and workshops and factories, down to his death. Before coming to Windsor Mr. Davison was formerly a surveyor in the Royal Engineers on the civil staff. He was an Associate Member of the Institution of Civil Engineers, London. —*Windsor and Eton Express.*

GENERAL BUILDING NEWS.

LIVERPOOL CATHEDRAL.—It is stated that the contract for the foundations of Liverpool Cathedral has been secured by a local firm—namely, Messrs. Morrison and Sons, of Wavertree.

CHURCH, CURRAHA, COUNTY MEATH.—The new church at Curraha, near Ashbourne, Co. Meath, is in Gothic style, and has been built by Mr. James M'Adorey, of Dundalk, from the designs of Mr. G. C. Ashlin, R.H.A. The high altar and two marble side altars were erected by Messrs. Early. The altar railings and sanctuary lamp are the work of Mr. John Kane. There are five stained-glass windows.

CHURCH, NEWTON ABBOT.—The foundation-stone of a new church for the parish of Highweek, Newton Abbot, was laid on the 13th inst. The new church will be erected on the spot on which Abbotsbury House formerly stood, and it will consist of nave, north and south aisles, and chancel, and seating accommodation is to be provided for 750 persons, including the choir. The main walls are to be of Stoneycombe limestone. The windows and tracery will be of Bath stone. Nine buttresses will support each of the main walls, and the two aisles will be lighted by six windows. Of the three windows to be placed in the east end, the centre one will be that containing the allegorical work now in St. Mary's chapel-of-ease. There are also to be three windows in the west end, besides several smaller ones in different parts of the church. The roof is to be of Delabole slate, and ridge tiles of slate colour, and the main ribs are to be of Baltic pine. The two main entrances will be through porches on the north and south sides, with granite steps and stonework similar to that in the main building. The font is to stand in the baptistry between the two entrances. The nave and north and south aisles will be 96 ft. 6 in. long and 59 ft. 9 in. wide. The dimensions of the chancel will be 35 ft. by 31 ft., with a 4-ft. passage at the back giving access to the vestries. The clergy vestry is to adjoin the supplementary choir, and the choir vestry is to be opposite, both 11 ft. 6 in. by 20 ft. The heating chamber, 11 ft. 6 in. by 9 ft., is to be under the clergy vestry, and it will be entered from the exterior of the church. The interior lining of the main walls will be of Bath and Beer stone. The piers, the seven pillars on either side of the nave, and other work forming the arcades, will likewise be of Beer stone. The nave, aisles, and vestries are to be of wood-block flooring of Oregon pine, and the chancel floor is to be concreted preparatory to being laid with tiles. The plans include a tower with spire, which is to rise to a height of 200 ft., but its erection is not contemplated for some time. Mr. E. Sedding, Plymouth and London, is the architect.

SCHOOL, SHEFFIELD.—On the 14th inst. Lord Londonderry declared the new Council school, in Hammerton-street, Staniforth-road, open.

The school is in two departments. The infants' block, for 340 children, faces Hammerton-street, and the building for the senior mixed department fronts to Ouseburn-road, and has accommodation for 540 children, excluding the floor area of the central hall. The infants' school has six classrooms arranged round a central corridor, four of the rooms being separated from the corridor by movable partitions. The senior school has a central hall, 66 ft. by 33 ft., with nine classrooms grouped round it, each for sixty children; there are glazed movable sashes between the hall and classrooms. The walls are faced externally with coursed Bole Hill rockies, with dressings of Stoke ashlar, and the roofs are covered with dark Westmorland slates. The work has been carried out within the amount of the contract—13,989*l*. The architect was Mr. W. J. Hale, of Sheffield.

SCHOOLS, BOURNVILLE.—A tender by Messrs. J. Bowen and Son, of Balsall Heath, of 19,300*l*., has been accepted for the erection of elementary day schools for Bournville. The schools are designed by Mr. Alexander M. Harvey, the Consulting Architect to the Bournville Trust, and the style is a free Gothic treatment. They will stand in 2½ acres of ground in the centre of the village, with the triangular green in front. The park is on the one side, Thorn-road on the other, and village gardens at the back. A tower will rise to a height of 60 ft. Special accommodation is provided for instruction in laundry work, cookery, carpentry, and other handicrafts, and, in addition, a library and laboratory are to be provided. The number of school places which will be provided is 540, and eventually another school for 270 infants is to be erected. The main block, for boys and girls, will be completed, however, before the erection of the last-named school is entered upon.

SUNDAY SCHOOL, BRADFORD.—The foundation-stone has just been laid of a new Sunday school and parochial hall in connexion with St. Clement's Church, Bradford. The total estimated cost of the school is 3,500*l*., but it has been decided to proceed with that portion of it which is most urgently needed—namely, the assembly and classrooms. This is estimated to cost about 2,400*l*. Plans by Mr. Horace E. Priestley, architect, Bradford, were accepted. The building will be Gothic in style, and one story high, the main features being an assembly hall and a smaller room to seat 200 children, sixteen classrooms, and a basement available for gymnasium.

TECHNICAL SCHOOL, TYLDESLEY.—A new technical school has just been opened at Tyldesley, Lancashire. The principal elevation fronts Upper George-street and is Renaissance in style, the material used being pressed red stock facing and stone dressing. The floors are of concrete, and the gymnasium and classroom floors are finished with wooden blocks. In the basement are a gymnasium, 54 ft. by 26 ft., ambulance-room, 59 ft. 6 in. by 34 ft., store-room, 25 ft. by 14 ft. 6 in., heating chamber, 12 ft. 6 in. by 13 ft., and coal store, 10 ft. by 13 ft. Access to this floor is provided by a main staircase built of stone and by a yard entrance. On the ground floor are five classrooms, 26 ft. by 26 ft., 26 ft. by 16 ft., 26 ft. by 26 ft., 26 ft. by 26 ft., and 24 ft. by 21 ft. respectively, secretary's office, 15 ft. by 11 ft., and waiting-room, 11 ft. by 7 ft. Gentlemen's cloak-room and retiring-rooms are provided. The first floor extends the whole frontage to Upper George-street, and contains a lecture hall, 61 ft. by 27 ft., a classroom, 26 ft. by 16 ft., chemical lecture theatre, 26 ft. by 27 ft., and ladies' cloak and retiring rooms. The corridors are finished with mosaic. The woodwork and the internal finishing are of pitch-pine. The heating is by hot water. The contractor for the building is Mr. J. H. Wilson, and the brickwork has been executed by Mr. J. Bridge, of Walkden, the lighting and plumbing by Mr. H. Baxendale, Tyldesley, and the block floors by Messrs. R. Lowe, Ltd., Farnworth. The architect was Mr. J. Holt, C.E., of Manchester.

PUBLIC HALL, THURNSCOE, NEAR DONCASTER.—A new public hall has been erected in this village. The body of the hall is 55 ft. long by 33 ft. wide and 15 ft. 6 in. high. It is built of brick, relieved with stone, and in the front there is a porch and a lobby. Inside there are two classrooms situate at the rear of the building, and a scullery. The classrooms and hall can be divided by movable partitions; whilst there is also a movable platform. The classrooms are heated by fireplaces, whilst the heating apparatus for the hall is on the low-pressure system, with pipes and radiators, which have been fixed by Messrs. Wright Brothers, of Sheffield. The building is lighted by gas throughout, and accommodation is provided for 400 people. The contractors for the work are Messrs. Thornton and Sons, of Rotherham, and Mr. R. Higginbottom, of Thurnscoe, has been the architect.

THE CITY CREMATORIUM, ILFORD.—The crematorium at the City of London Cemetery will shortly be opened for use. The building has been erected from plans and designs made by Mr. Andrew Murray, the late Surveyor to the Corporation, and approved by the Home Secretary. The civic authorities will submit their proposed regulations and charges for approval by the Local Government Board; they also propose to take powers under the Cremation Act of 1902 for disposing of the remains of persons dying of plague, cholera, or yellow fever within the limits of the Port of London, and to appoint Dr. Collingridge and Dr. Gordon Browne as honorary medical referees.

WESLEYAN MISSION HALL, SEATON HIRST.—A new Wesleyan mission hall, to accommodate 400 persons, is being erected at Seaton Hirst at an estimated cost of 1,525*l*. The front (and larger) portion of the site is being reserved for the erection of a church, the whole scheme costing 3,500*l*. The plans of the proposed edifice have been prepared by Mr. J. Walton Taylor, architect, of Newcastle, the present contract being let to Mr. T. A. Turnbull, of Rowlands Gill. The buildings are Early English in style, and comprise a mission hall with transepts capable of seating 650 persons, the main entrance to which is in Milburn-terrace. The building not being proceeded with is the schoolroom, and adjoins the hall. It will accommodate 380 persons, and the principal entrance is in Seventh-avenue, connected to the hall by a corridor from which access is gained to a minister's vestry and lavatory. At the rear of the schoolroom are kitchen, vestry, and classroom, with heating chamber under. These are to be used in conjunction with the caretaker's house, where religious services have for some time been conducted. The walls are to be built of selected facing bricks, with stone dressings. The heating will be by hot water on the low-pressure system.

NEW MARKET, OLDHAM.—The new market at Oldham, the foundation-stones of which were laid a short time ago, will comprise a market hall and shops surrounding, and on two sides occupies a site aligned by Albion and Henshaw streets and the old market ground. It has been designed by Messrs. Leeming and Leeming, architects, of London, based upon measurements and particulars supplied by the Markets and Baths Committee of the Corporation. Mr. David Blunn, Oldham, is clerk of the works. The measurements of the building will be 169 ft. by 109 ft. 4½ in. The surrounding shops will be arranged with frontages and windows in the hall. The new structure will be put up in two portions, so as to allow of the present old Victoria Market to remain standing until the first half of the new building has been completed. There will be three entrances to the market, one each from Albion and Henshaw streets, and one from the market ground. The interior of the building will be lined with glazed bricks, and will be ornamented with the iron and glass fronts of the shops. The roof will be of iron covered with slates of imperishable glazing, the latter having lead coverings. The work will be carried out in Accrington brickwork, with Yorkshire stone dressing. Mr. Edward Stephenson, of Oldham, is the chief contractor.

MUNICIPAL BATHS, CAMBERWELL.—On Tuesday last week, at the invitation of the Mayor of Camberwell and the members of the Public Health Committee, a party of visitors inspected the Old Kent-road Public Baths, which are now approaching completion. The building, which faces the main road, is being built by Mr. A. N. Coles, from the designs of Mr. Harding Payne. Two large swimming baths will be provided, and slipper baths, and a Turkish bath, and a Russian vapour bath.

AYR WORKING GIRLS' INSTITUTE.—An institution intended for the use of working girls in Ayr was opened on the 11th inst. by Sir James Fergusson, M.P. The institute, which is a three-story erection, built to designs by Mr. William M'Clelland, architect, Ayr, in James-street, at its junction with George-street, is intended for the board and lodging of twenty-eight girls, and otherwise as a club for any working girl who chooses to join it, there being a dining-room, drawing-room, boarders' sitting-room, and hall on the ground floor, with the sleeping accommodation on the two upper floors.

COUNTY COURT BUILDINGS, MIDDLESBROUGH.—The business of the Middlesbrough County Court has been transferred from the old premises in North-street to new buildings in Wilson-street West, in the centre of the town. The new structure, which has cost 12,000*l*., has been erected to the designs of Mr. H. N. Hanks, of H.M. Office of Works. It is constructed with Accrington brick, with stone facings. On the ground floor are the general offices, fireproof strong-room, registrar's and assistant-registrar's rooms, etc. On the first floor are the registrar's and judge's courts, with retiring-rooms, solicitors' rooms, etc., whilst above these accommodation is provided for the caretaker. The contractor is Mr. J. Davidson, Stockton, Mr. J. G. Parsons, of H.M. Office of Works, being clerk of the works. The work has been carried out for the contractor by the undermentioned firms:—Plumbing, J. Guthrie, Stockton; painting, Jordan and Adamson, Stockton; plastering, Bolton and Mawson, West Hartlepool; heating, W. Richardson, Darlington; fittings, Fielding and Bottomley, Halifax; electric lighting and ventilating, Wright, Methuen, and Co., Manchester; steelwork, Dorman, Long, and Co., Middlesbrough, and fixed by Baker Bros., Middlesbrough.

LAING ART GALLERY, NEWCASTLE-ON-TYNE.—Lord Ridley opened, on the 13th inst., the Laing Gallery, Newcastle. The building is two stories in height, forming a hollow square, the ground floor consisting of an entrance and sculpture hall, and three art or museum galleries extending through behind the public library, and lighted from a central court; the upper floor being entirely taken up with top-lighted art galleries, four in number, and averaging in size about 65 ft. by 27 ft., by 27 ft. up to the top of the arched ceiling. The main façade is to Higham-place, and the corner, formed with the library at the south-east angle, is occupied by a tower, 23 ft. square and 112 ft. high, which contains the grand staircase. The staircase is reached from the sculpture hall, the main entrance to which is about the centre of the Higham-place front. The floors throughout are constructed of concrete, in the case of the upper floors combined with expanded metal on steel joists. The surface of the floor of the entrance hall is of tesselated marble pavement, and that of the galleries is of polished oak blocks. At the north end of the buildings are provided receiving-rooms, a private staircase, and a picture hoist. The design externally, carried out in ashlar, is Renaissance in style, the ground floor forming a rusticated plinth the same height as the library. Upon this are detached Ionic columns projecting out on either flank and carrying the entablature in semi-circular arched pediment, in which are sculptured niches. The main entrance is 8 ft. wide, flanked by double detached Doric columns with pedimented entablature, and with sculptured figures on either side. The tower has a band of sculpture on the exposed faces, immediately under the lantern, the latter being octagonal and supporting a stone dome about 20 ft. in diameter. The ventilation is on the plenum system. The architects of the new gallery were Messrs. Cackett and Burns Dick, and the contractors were Messrs. J. and W. Lowry, Newcastle.

COUNTY ASYLUM, LANCASHIRE.—The Lancashire Asylums Board has for some time been considering the provision of a sixth asylum, capable of accommodating 2,000 persons. The scheme has been drawn up on the "colony" system, which is expected to effect a saving of 20,000*l*. on the "corridor" system. We are informed that the Lunacy Commissioners have given their sanction to the scheme, which will be proceeded with at once. Mr. Littler, of Preston, is the architect. The asylum is to be erected at Langho, near Blackburn.—*Manchester Courier.*

Y.M.C.A. BUILDINGS, BIRMINGHAM.—On the 13th inst the Duke of Argyll opened the new building which has been erected by the Young Men's Christian Association in Dale End, Birmingham. The five-story terra-cotta building includes a hostel with forty bedrooms, smoke-rooms, lounges, and dining-halls. Some of the halls are to be available for the use of the public. Educational classrooms and halls for religious purposes are provided, and there is a gymnasium, with needle, plunge, and spray baths. The youths' branch at the rear of the principal building, is complete in itself. The site, costing 6,500*l*., is a gift from Mr. George Cadbury, and the work has cost 36,000*l*. The architects of the building are Messrs. Ewen Harper and Brother of Birmingham.

MEMORIAL INSTITUTE, WALKERBURN, N.B.—On the 1st inst. the new Ballantyne Memorial Institute at Walkerburn was opened. The building comprises a lower story with billiard-room and two tables, reading-room, games-room, etc., for males, and an upper story for ladies, which consists of reading-room, sewing-room, cooking-room, cloak-room, etc. Mr. Dunn, architect, Edinburgh, prepared the plans for the work.

NEW LIBERAL CLUB, KEIGHLEY.—A new Liberal club for the North-East Ward, Keighley, was opened recently. The building is situated in Bradford opposite to

Victoria Park entrance, and has been erected from plans prepared by Messrs. John Haggas and Sons, Keighley.

TOWN HALL, STOCKPORT.—The Mayor of Stockport (Alderman Giles Atherton) on Saturday last week laid the foundation-stone of a new town hall for the borough. Mr. A. Brumwell Thomas, of London, was awarded the first premium of 100*l.* for designs, and was subsequently appointed architect of the building, whilst the contract was let to Mr. J. Briggs, whose tender amounted to 56,881*l.* The site of the new town hall is in Wellington-road. The building will be of Portland stone, and will rise in the main to a height of 40 ft., and the clock tower to 110 ft. The whole of the Council suite of apartments will be placed in the one centre block surrounding a spacious ante-room, including the Council chamber, 66 ft. by 30 ft., and a communicating suite of committee-rooms, the total combined area being 54 ft. by 30 ft. One of the features of the building will be a large public hall on the upper ground floor to accommodate 1,500 persons. All the halls and corridors are to be paved with marble slabs and mosaic; other floors with wood blocks.

TOWN HALL, HIGH WYCOMBE.—The opening of the new town hall at High Wycombe took place recently. The building has been erected from plans by Messrs. Bateman, Bateman, and Alfred Hale, of Birmingham, which were selected in competition by Mr. T. E. Collcutt, the assessor. The architects were instructed to prepare the necessary drawings for the first portion of the scheme to be executed and the tender of Messrs. C. H. Hunt and Son, High Wycombe, was accepted, the works being commenced in October, 1903. Mr. Joseph Fishburn has acted as clerk of works. Owing to the death of Mr. J. J. Bateman soon after the commencement of the work, Mr. C. E. Bateman, his son, and Mr. Alfred Hale have had entire charge of the work. The general dimensions of the hall are 81 ft. 6 in. long, by 53 ft. wide, with 1,000 chairs, and gallery, stage, dressing-rooms, etc., are provided. The elevation of the building facing Queen Victoria-street is of red bricks and Portland stone. There is Portland stone up to the first floor level, while the two end portions are carried right up in Portland stone, terminating with carved stone panels beneath the eaves. The outside walls of the first floor are red brick, with Portland stone reveals and heads to the windows, five of which light the supper-room. There is a cornice of Portland stone between the first floor and the second floor window, and a stone cornice to the eaves. The roof is covered with Colley Weston stone slabs, surmounted with a turret painted white, with a cover at the apex of copper. The approach to the building is by three entrances, through doors which give access to the entrance lobby, and beyond them are oak screens with leaded lights. From the entrance hall, which is 15 ft. by 52 ft., is a staircase leading to the upper part of the building. The staircase is a feature of the new building, being entirely of Hopton Wood stone; the spandrils are of polished stone. The upper portion is carried by polished Hopton Wood stone columns, whilst the fireproof floor is supported by girders. The floors of the entrance hall are of the same stone. Leading from the entrance hall, on either side, are ladies' and gentlemen's cloak-rooms, and from these staircases run down to the ladies' and gentlemen's lavatories in the front basement. The main or grand hall is laid with grooved and secret nailed boards. At the western end of the building there is a stage, with a fine proscenium arch. The ceiling of the main hall, in the form of an eliptic arch, is divided into seven panels, with cornices in plaster with floral enrichments. Underneath the hall there is cellarage accommodation for the storage of chairs and other purposes. On the first floor is a supper-room, at one end of which there is a "servery," whilst at the other end is "the Mayor's ante-room." The gallery at the east end of the building is fitted with oak benches. On the second floor are the caterer's kitchen, larders, etc. Beyond are the caretaker's suite of rooms. On either side of the front portion of the building is a lift running up from the basement to the second floor. The corridor paving throughout is of mosaic with borders in conventional designs, whilst in the centre at intervals are arranged in mosaic fashion representations of the Borough Arms. The gas-cooking apparatus has been supplied by the High Wycombe Gas Light and Coke Company, and is capable of cooking for 100 persons. In the cooking-room is one of Davis' Gas Stove Company's gas ranges. The heating arrangement, which is a low-pressure water system, surrounding the entire building, has been carried out by Messrs. G. N. Haden and Sons, engineers, of Birmingham and Trowbridge. The electric light fittings are by Mr. E. Fletcher, of Key Hill, Birmingham. The wiring has been carried out by Messrs. Higgins and Griffiths. At each side of the hall there are ornamental iron gates, opening between Portland stone pillars, with arched heads, finished at the top with protecting columns. The iron gates, etc., have been supplied by Messrs. Hart, Son, and Peard, of London and Birmingham.

NURSES' HOME, ROCHDALE.—The Countess of Derby has just opened a new Nurses' Home at Rochdale, built as a memorial of Queen Victoria. The building is faced with Huncoat plastic bricks, relieved with polished stone dressings from Stancliffe Quarry, Darley Dale. The roofs are tiled. It is fitted throughout for electric lighting. The floors are boarded, with the exception of the entrance hall and a portion of the corridor on the ground floor, which will be done in oakwood block flooring. Messrs. Woodhouse, Willoughby, and Langham, of Manchester, are the architects.

COUNCIL BUILDINGS, KEMPSTON, BEDFORDSHIRE.—Built by Messrs. B. Litchfield and Son to the design of Mr. E. H. C. Inskip, the Surveyor to the Council, these offices have a frontage of some 40 ft. The red-brick front is surmounted by ornamental stonework bearing the words, "Kempston Urban District Council, 1904." The entrance is on the left. There is a vestibule with double doors, while the floor is of tesselated pavement. On the right is the surveyor's room, 14 ft. by 18 ft. Behind it is a room of similar dimensions, which is the clerk's office. Between this and the surveyor's room a strong-room has been constructed. Upstairs there is a small landing with a cloak-room, and another room, both opening into the Council Chamber. This hall occupies the full length of the building. It is 35 ft. long and 18 ft. wide, the height being 12 ft. up to the slope of the roof, which ends in a flat 10 ft. wide.

PROPOSED NEW THEATRE IN BOTCHERGATE, CARLISLE.—Plans of a proposed theatre in Botchergate are being drawn by Messrs. Owen and Ward, of Birmingham. The theatre, which it is proposed shall be built on the site of the Old St. Cuthbert's Vicarage, is to have entrances from Botchergate through the Arcade, from King-street, for which purpose a block of cottage property has been purchased, and from Lancaster-street, to which the site extends backwards.

NEW INSTITUTE BUILDINGS, GLAPWELL, DERBYSHIRE.—The new premises of the Glapwell Institute, which were opened a short time ago, have been erected at a cost of 2,500*l.* The original architect of the structure was the late Mr. Wild, of Sharrow, Sheffield, and upon that gentleman's decease the work was taken up by Mr. Beale. Mr. C. Oakley, of Hillstown, was the contractor.

HOSPITAL SCHEME, LEEDS.—The Workhouse estate in Beckett-street, Leeds, is undergoing a transformation. In the main building there are a hundred more inmates than the authorities have proper accommodation for, while the provision available for dealing with the sick and infirm poor has long been inadequate to meet the requirements of the Union. This has caused the Guardians to embark on a scheme of hospital extension. Plans have been approved by the Local Government Board for the erection of a new kitchen and general stores, receiving and serving rooms, sick wards for males (186 beds), sick and venereal wards for females (183 beds), male venereal wards (twenty beds), maternity wards (twenty-six beds), infectious diseases wards for ten males and a similar number of females, and children's wards containing sixty-six beds, together with an operating theatre and a mortuary. Altogether accommodation is provided for the treatment of 500 cases. The old industrial schools, which are thus being first adapted to fresh needs, are intended to form one of a series of several new blocks which are to be built on the Beckett-street estate. They are undergoing entire reconstruction, and new wings are to be added for the purpose of dormitories. The remaining blocks will be proceeded with in sections as soon as the one in hand is completed, so as to allow of the removal of patients from the overcrowded old buildings that have to come down to make the necessary room. Part of the scheme is the extension of the nurses' home, which was built about a dozen years ago to accommodate forty trained nurses. The number of nurses engaged in the institution is now sixty, and to meet the general requirements of attendance upon the sick cases under the care of the medical staff further provision is, of course, needed. Mr. T. Winn is the architect.

HOSPITAL, BIRMINGHAM.—A sub-committee of Birmingham Health Committee recently inspected, at Little Bromwich, the hospital extensions which have just been carried out at a cost of upwards of 20,000*l.* These extensions comprise the provision of three permanent pavilions, an isolation pavilion, and a large block of buildings for the accommodation of nurses. It is proposed to devote the three pavilions, which, in the aggregate, will provide accommodation for about seventy-two additional patients, to the treatment of typhoid and diphtheria patients, and the "separation pavilion," if necessary to the reception of infectious cases, concerning the definite diagnosis of which there is some doubt. The three new pavilions, which have been erected from plans by Mr. W. H. Ward, are of one story, similar in design and plan to those erected some few years ago, with the exception that in each of the new pavilions there are two small separation wards, with the nurses' duty-room so placed as to command a view of all the four wards. A leading feature of the new wards, which are 72 ft. long by 30 ft. wide, is the addition of a glazed wall tiling, forming a dado 5 ft. in height. The new home, which will accommodate fifty nurses, comprises bedrooms, large recreation-room, kitchen, etc., with an escape staircase from the upper rooms. The isolation pavilion includes four small wards.

BATHS, WAVERTREE.—The foundation-stone has just been laid of the new Picton-road building for the Baths Committee of the City Council of Liverpool. The plans of the establishment, which is estimated to cost 26,000*l.*, were prepared by Mr. W. R. Court, and Messrs. Waring and Sons, of West Derby, are the contractors. The site has a frontage to Picton-road of 70 ft., and to Glyan-street of 200 ft. Provision is made for two swimming baths, one 75 ft. by 35 ft., and the other 50 ft. by 27 ft., and fifty-five private baths. The buildings are set back 45 ft. from the line of the street, and space is reserved for additional private baths when required.

STAINED GLASS AND DECORATION.

MEMORIAL WINDOW, ST. STEPHEN'S CHURCH, BELFAST.—A stained-glass window has been unveiled in this church in memory of the late Rev. Canon Irvine. The memorial has been designed and executed by Mr. W. E. Roberts, of Belfast.

APPOINTMENTS.

DURHAM UNIVERSITY COLLEGE OF SCIENCE.—Sir Isambard Owen has been elected, *vice* the late Dr. H. Palin Gurney, to the Principalship of Durham University College of Science, Newcastle-on-Tyne, the governing body of which have just resolved that the name shall be in future the Armstrong College of Science in the University of Durham. Sir Isambard Owen is Vice-Dean of the Faculty of Medicine in the University of London, and has played a conspicuous part in the advancement of higher education in Wales.

ROYAL COLLEGE OF SCIENCE.—The Marquis of Londonderry, President of the Board of Education, has nominated Mr. W. Gowland, Professor of Metallurgy at the Royal College of Science, to succeed the late Sir Clement Le Neve Foster, F.R.S., as a member of the Examination Board of the Department of Technology of the City and Guilds of London Institute, Kensington.

BATTERSEA POLYTECHNIC.—The Governing Body of the Battersea Polytechnic have appointed Mr. H. A. Golding, A.M.Inst.C.E., to be assistant in mechanical engineering for the Drawing Office; and Mr. John Hurst (assistant-instructor in woodwork under the London County Council) to be assistant-instructor in carpentry and joinery and manual training in woodwork.

SANITARY AND ENGINEERING NEWS.

SEWERAGE SCHEME FOR BOUGHTON.—On the 14th inst., in the Council Chamber, Chester, Mr. M. K. North, M.Inst.C.E., an Inspector of the Local Government Board, held an inquiry into the Chester Corporation's application to the Local Government Board for sanction to borrow 4,000*l.* for works of sewerage at Boughton. The Town Clerk said the population of the city was 38,309, and the rateable value was 212,515*l.* 5s. 10d. The City Surveyor (Mr. I. Matthews Jones) explained the scheme in detail, together with particulars of his estimate of cost.

SEWERAGE OF SKEGNESS.—The Skegness Urban District Council have received sanction from the Local Government Board to borrow the sum of 10,360*l.* for improvements to the sewerage system, which includes a new sewer

along Dummond-road, construction of new pumping station, pumping main and ejector chamber, also septic tank and bacterial filters on the existing sewage farm. Messrs. Elliott and Brown, the engineers to the scheme, have been instructed to make the necessary arrangements for the work to be started as soon as possible.

PROPOSED SEWERAGE SCHEME, ASKERN, NEAR DONCASTER.—The Rural District Council of Doncaster have applied to the Local Government Board for sanction to borrow 3,843*l.* for purposes of sewerage and sewage disposal for the township of Askern, and Colonel A. G. Durnford, R.E., Inspector under the Local Government Board, recently held an inquiry into the matter. The scheme, which has been prepared by Messrs. D. Balfour and Son, of Newcastle-on-Tyne and London, provides for the main sewering of the whole of the village, and collecting the sewerage at a pumping station, where it will be lifted by oil engines and pumps and discharged at a site of disposal works some 1,000 yds. distant, and then treated in septic tanks followed by filtration in continuous filters, the effluent being then distributed over 2 acres of land. The estimated cost of the works is 2,890*l.*, the land will cost 400*l.*, and the clerk of works, engineers, wayleaves, etc., 553*l.*, making a total of 3,843*l.*

NEW BRIDGE, SMALL HEATH, BIRMINGHAM.—The new bridge connecting Sparkbrook with Small Heath was opened on the 8th inst. The structure has been erected under the superintendence of Mr. John Price, the City Surveyor, and the cost has been 49,000*l.*

HARBOUR IMPROVEMENTS, PETERHEAD, N.B.—The negotiations which have been in progress for the purpose of securing funds for the carrying out of a scheme of harbour improvement at Peterhead have been completed. The scheme involves an expenditure of 84,000*l.*, and has been planned by Mr. William Shield, C.E., London.

FOREIGN.

FRANCE.—At the Petit Palais, Paris, there is now being organised a collection of sculptures and ceramic work by Carriès, presented to the City of Paris by M. Hœntschel, and which will be opened in the course of November.——M. Guillaume has definitely resigned his position as Director of the Villa Medici.——The works are shortly to be commenced for a new bridge over the Seine, between the communes of Issy and Boulogne. ——At Lyons a historical exhibition has been opened of the works of painters and sculptors who were natives of that city.——The Municipality of Quimper have commissioned M. Ramonatas, the architect, to make plans for an asylum for old men, at an estimated cost of 300,000 francs.——A hospital is to be erected at Béthune, at an estimated cost of 300,000 francs.——A committee has been formed at Rocroy for the erection of a monument to the memory of General Moreau. ——The Government has established a District School of Architecture at Rennes; and the new School of Architecture at Nantes has just been opened.——A competition has been opened for architects of the departments of Meurthe-et-Moselle, Meuse, Vosges, and Ardennes, for a large group of buildings to be erected at Nancy, to accommodate a Bourse de Commerce and various industrial societies of the district.——A large group of new schools has just been opened at Saint-Ouen l'Aumône, from the designs of M. Léon Mériot.

PUBLIC WORKS IN GENOA.—We learn that building in Genoa continues at a great pace, especially on the outside of the town, where houses (principally flats) are springing up in all directions. The new large station at Brignole is nearly completed, and the enlargements and improvements at Principe are progressing rapidly, as is also the marshalling station at Campasso. The question of connecting by a tunnel the eastern portion of the port with the new station at Brignole is still under consideration; though the difficulties of construction are great, it is believed they will be overcome. It is also believed that the proposed new tunnel through the Apennines will be a necessity when the new harbour works are undertaken, as the two existing tunnels through the Giovi are considered inadequate for the anticipated increase of traffic. The tunnels reached from Sampierdarena by opposite sides of the Polcevera valley join the main line again at Ronco, but, notwithstanding recent improved ventilation, the smoke that collects limits the number of trains that can be run through them, and unless electric traction be adopted from Sampierdarena to Ronco, or further improvement in ventilation is found possible, it is probable that the new tunnel will be made. The new harbour works just referred to are to be begun this autumn. The estimated cost of them is about 2,400,000*l.*, and is to be raised by a loan. The works will include new docks and a general extension of the harbour and quays in the direction of Sampierdarena.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS. —The Civil and Mechanical Engineers' Society has changed its offices from 47, Victoria-street to 25, Victoria-street, Westminster. ——Mr. A. S. E. Ackermann, consulting engineer, has removed his offices from 47 to 25, Victoria-street, Westminster.

THE BUILDING BY-LAWS, CARDIFF.—A deputation representative of the building trades of Cardiff waited upon the Cardiff Public Works Committee last week to protest against the strict enforcement of certain building by-laws which are at present in operation in the borough. Mr. George David, solicitor, who had been selected to head the deputation, said they represented not only the Master Builders' Association, but the whole of those who were engaged in the building trades in Cardiff, and it also included architects. The enforcement of certain by-laws had had the effect of putting a stop to the erection of small houses in the town, because the expense of building in accordance with the strict letter of the by-laws made it prohibitive. Two concessions which the deputation asked were that they should be allowed to erect the walls of domestic buildings in accordance with the graduated scale, and that they might be permitted to build all party walls of two or three story houses of 9-in. brickwork, instead of 13½ in., and that they should be allowed to insert plugs and plates in a party wall. They also asked to be allowed to measure the height of stories from floor to ceiling, instead of from floor to floor. The speaker did not think the Committee was absolutely bound to enforce the by-laws, because, acting on the advice of the Town Clerk the other day, one of the committees of the Corporation resolved to leave the enforcement of a by-law to the discretion of the Chief Constable. He thought the builders would be quite content if that Committee adopted the same course in regard to the building by-laws by allowing the Borough Surveyor (Mr. Harpur) to deal with such matters. Mr. E. W. M. Corbett said he had for a number of years dealt with similar by-laws as were in operation in the Borough of Cardiff in another district, and they had found that to enforce these by-laws in their entirety was absolutely impossible. The strict enforcement of the by-laws could not fail to drive people away to districts where the by-laws were not so strictly enforced. With regard to fires being communicated from one house to another through plugs and boards being inserted in party walls, he, personally, had never heard of a fire spreading from one house to another in that way. Mr. Hoare said several letters had been addressed to the Master Builders' Associations of Newport, Swansea, Bristol, Birmingham, and Liverpool on the questions mentioned that day, and in each case the builders were granted the concessions for which they were now asking.—Alderman Mildon: Supposing Mr. David, we thought fit to wink at certain clauses in our by-laws, and in regard to others we thought fit to go to court, what would be our position? Mr. David replied that it would not make any difference. They could wink at one clause and prosecute in another. The Chairman (Alderman J. Ramsdale) promised that all the points put before the Committee that afternoon should receive their fair and honest consideration.—*Western Mail.*

LINOLITE LAMPS.—We have received from the Linolite Company, of 47, Victoria-street, Westminster, a copy of a report they have received from Mr. Dow, of the Central Technical College, on twelve lamps which they submitted to him for a life test. One of the lamps failed after 650 hours but all the rest successfully completed a 1,200-hours run. The lamps were for 100 volts, and the efficiencies, assuming that "candle-power" is "mean horizontal candle-power," and that this forms a fair basis for comparison, are comparable with those obtained with the best glow lamps. The conclusions arrived at are that the decrease in the candle-power during the first 1,000 hours is about 15 per cent., and that the reflector does not exert a prejudicial effect on the life of the lamps.

HANOVER-SQUARE, W.—Under the directions and superintendence of Mr. T. H. Watson some improvements and alterations, comprising an additional story, are being carried out by Messrs. James Smith and Son, contractors, at the Oriental Club. The club-house was erected in 1827-8 after plans and designs made by Benjamin Dean Wyatt in conjunction with his younger brother Philip; in 1871 a wing was added by Henry M. Burton, nephew and successor of Decimus Burton. On October 9, 1897, we adverted to the structural change that had then been recently made at No. 17, at the corner of Tenterden-street and the square, which considerably altered the appearance and character of the house, which, known as "Sweet Seventeen," was formerly the home of the Arts Club. We now observe that No. 17 has been pulled down, and that two or three of the adjoining houses on the north side of Tenterden-street, opposite the Oriental Club, have lately been rebuilt.

THE LAW AS TO COMBINED DRAINAGE.—The Public Health Committee of Fulham Borough Council reported on Monday that they had decided to ask the London County Council to endeavour to get the law as to combined drainage altered as follows:—(1) In the construction of the Metropolis Management Act, 1855, and the Acts amending the same, the word "drain" shall be deemed to apply to and include the subject matters specified in the interpretation of the word "drain" contained in the 250th section of the Metropolis Management Act, 1855, and in the 112th section of the Metropolis Management Act, 1862, and also any drain the construction of which as a sewer has not been sanctioned by a local authority or which has not been approved as a sewer by the Metropolitan or other Commissioners of Sewers, or by the Metropolitan Board of Works, or the London County Council. Provided that the London County Council may at any time hereafter approve as a sewer any drain for draining a group or block of houses where, in the opinion of the local authority of the district, it is desirable that such drains should be cleansed, repaired, and maintained at the expense of such local authority, and such drains shall thereupon become a sewer and be vested in such local authority. (2) Any local authority may recover any expenses incurred by them after the passing of this Act in cleansing, repairing, or replacing any drain for draining any group or block of houses from the owner or owners of any premises for the drainage of which such drain is, or may be, used in such proportions, if there be more than one such owner as may be determined by the surveyor of the local authority, or in case of dispute by the London County Council. Any such expenses may be recovered from the present or any future owner of the premises, either by action in the High Court or before a Court of Summary Jurisdiction.

ST. THOMAS'S HOSPITAL.—The Treasurer's report of the progress of this hospital states that during the year No. 6 block has been taken in hand, both the wards have been rearranged, the sanitary details of the pavilions have been completely overhauled and perfected, and the warming of the wards improved. Much consideration has been given to the question of what is really the most useful hospital flooring. In two of the wards a trial has been given to linoleum as a covering, whilst in the third ward, which is now in hand, a trial is being made of teak parquet laid on the existing boards, it being felt most desirable to preserve as a basis wherever possible the old oak floors originally laid when the hospital was built, but which have become too rough and uneven on the surface.

CAPITAL AND LABOUR.

EMPLOYMENT IN THE BUILDING TRADES.—According to returns supplied by eighty-two Employers' Associations, whose members are estimated to employ about 90,000 building operatives of all classes, and by trade unions, with an aggregate membership of about 185,000, employment in the building trades continued dull during September, and on the whole was rather worse than in August. It was also worse than a year ago. With bricklayers employment was dull, and about the same as a month ago and a year ago. With masons it was moderate in England, but dull in Scotland. Employment with carpenters and joiners was bad generally, and worse than a month ago and a year ago. The percentage of unemployed trade union carpenters and joiners was 7·0 at the end of September, compared with 5·9 at the end of August, and 4·0 at the end of September, 1903. With painters employment was bad, and rather worse than a month ago and a year ago. With plasterers and plumbers employment was dull, and worse than a year ago. The percentage of unemployed trade union plumbers was 9·5 at the end of September, compared with 8·9 at the end of August, and 6·4 a year ago. With slaters and tilers employment was dull, and about the same as a month ago; it was rather worse than a year ago.—*Labour Gazette.*

PATENTS OF THE WEEK.

APPLICATIONS PUBLISHED.*

22,329 of 1903.—F. BLACKBURN, A. BELL, J. P. HAIGH, and R. H. BELL: *Mechanism for Raising and Lowering Window Sashes, and the like.*

A means for automatically raising the sashes of railway carriages, and the like, with a controlled movement, consisting in the arrangement of a spring barrel and a train of any desired number of wheels with a flyer and flyer catch, a ratchet wheel, and pawl advantageously placed to release the train or part of the train of wheels from action in one direction.

7,942 of 1904.—J. BURNS: *Mechanical Sliding Floor for Shop Windows.*

This relates to a mechanical arrangement that will enable a salesman at all times to gain access to window area, without the disarrangement of the goods displayed therein. The floor of window space is sunk 4½ in. below the front light, and, extending back into shop 3 ft. beyond window space, on this level floor is placed a duplicate sliding floor, fitted underneath with four sets of 1-in. metal rollers running on bands of 1-in. ribbon iron screwed into bottom floor and rubber coated to ensure silent movement. On this movable floor is placed a set of four wire stands 8 in. wide, stepped and rising from front to back in proportion to depth of window area. These support strips of plate glass, on which the goods are displayed. To gain access to the goods in the window, a wheel attached to a framing at the back is revolved by hand. this acts upon a screw mechanism joisting, and the floor, with stands, shelves, and goods, is instantly rolled back, leaving a clear space of 3 ft. from front trimmer to window.

17,595 of 1904.—CONDUITS AND FITTINGS, LTD., D. M. EDWARDS, and E. A. BROWN: *Bends, Elbows, and other Angle Pieces for Electric Conduits.*

A divided bend, elbow, or other connecting fitting for conduits, the sockets of which are formed with bridge pieces between which the intermediate portion of the fitting is jointed, the ends of the said intermediate portion which form parts of the sockets being screw-threaded to joint upon the pipes or tubes inserted into the sockets.

17,922 of 1904.—G. C. BROWN, JUN.: *Window Blind Furniture.*

"Scotch" window blind furniture, having a bracket and pawl so constructed and arranged that the brackets may be fitted in either the vertical or horizontal position, and when in the vertical position the blind can be made to run either next to the glass or away from it, whilst when in the horizontal position the blind can be made to run next to the glass.

17,947 of 1904.—H. J. SALTER: *Pipe Joints.*

A pipe-jointing device, consisting of a nut having within it a thimble, the flange of which rests against a shoulder in the nut, the said nut having also screwed into it a socket, the thimble and socket being destined to receive the opposing ends of the pipes to be joined, the ends of which pipes are flanged over the opposing ends of the thimble and socket.

17,983 of 1904.—M. HERSCHMANN and C. WALCHNER: *Windows.*

Windows, consisting in the combination of one or two casements adapted to be opened inwardly or outwardly, being provided on the inside with hinges, and on the outside with hinges, which hinges are of such construction that when the pins of the inner hinges are engaged in their sockets those of the outer hinges are disengaged, and *vice-versâ*, when the pins of the outer hinges are engaged in their sockets, those of the inner hinges are disengaged; a rail adapted to lock said casements, and a top sash adapted to be engaged directly by the casements in their closed position, and slidable in the window frame when the casements are open.

17,988 of 1904.—C. H. RANG, JUN.: *An Apparatus for Use in Constructing Concrete or similar Partition Walls.*

An apparatus for use in constructing concrete or similar partition walls, comprising two boards, uprights for guiding the boards hinged to the floor or to the ceiling joists, and held together by means of cramps or the like, and screw-bolts which run through the boards for the purpose of facilitating the setting up of the device, and preventing any bulging of the boards when the plaster sets.

18,109 of 1904.—R. KLINGER: *Ball Joints for Vertical Piping.*

Ball joints for vertical piping, which consists in arranging an annular duct, for the reception of viscid lubricant, in the ball casing on the same level as the end of the joint head for the purpose of enabling the lubricant to be introduced into the ball casing from the top, and thereby ensuring the lubrication and tight jointing of the ball head at all places on its spherical surface.

18,171 of 1904.—T. POTTERTON: *Hot-water Apparatus, and Boilers Connected therewith.*

This relates to an arrangement of hot-water apparatus in which the boiler is connected to a series of vessels constituting the hot-water tank by pipes having stop-cocks, so that the circulation can be caused to heat the water in one, two, or more vessels.

22,429 of 1903.—A. M. LAMBERT: *Manufacture of Building Slabs or Bricks.*

A mould for forming building slabs or blocks, consisting of a base, side frames hinged to the base, and adapted to open outwardly, and end pieces locked to the sides when the mould is closed, tight joints being formed between the sides and base, and a separate closing top.

23,778 of 1903.—W. G. MOORE: *Disinfection of Urinals, Water-closets, Baths, Lavatory Basins, Kitchen Troughs or Sinks, and like Vessels and Places.*

A mode of, and means for, disinfecting urinals, closets, baths, lavatory basins, kitchen troughs or sinks, and the like, and which may be fixed in vehicles, ships, buildings, hospitals, railway carriages, sea-going vessels, and the like, characterised by a vessel for containing disinfectant material and having perforated sides, in combination, with means for suspending or supporting or fixing same in the required position.

24,741 of 1903.—R. A. HADFIELD and P. B. BROWN: *Temporary Tracks for Railway and Tramway Permanent Way.*

A tramway or light railway ramp made so as to prevent its thin end from being turned up by the action of wheels rolling over it, with a thicker portion extending longitudinally from the thin end of the ramp and arranged at one side of the ramp so as to be clear of vehicles running therealong.

24,869 of 1903.—J. SHANKS: *Pipe Joints.*

Pipe joints, consisting of a fitting formed with a sleeve of rubber, or other compressible material, having ribs, corrugations, serrations, or projections on its outer or inner surfaces, or on both surfaces, and with or without a flange at one end.

25,437 of 1903.—E. HOMAN: *Partitions Employed in Fireproof or other Buildings.*

A partition, consisting of a series of bricks or blocks, grooves in the meeting edges of the bricks or blocks, short tie bars or rods within the channels formed by the grooved meeting edges of the bricks or blocks, and so arranged that their ends break joint with the courses of the bricks or blocks and with one another, and a filling or grouting of suitable cement.

5,440 of 1904.—A. SALTER, JUN.: *Apparatus for Jointing and Repairing Drain Pipes.*

An apparatus for jointing and repairing drain pipes, consisting in the combination of two rubber discs, plates arranged on each side of said discs, holes in said discs and plates, chains, or other flexible connexions passed through the said holes, each chain being fixed to one disc and passing loosely through the holes in the other disc, and a spring arranged between said discs having a normal tendency to draw the discs together.

10,227 of 1904.—A. T. MIRZA: *Automatic Sluice Gate.*

The invention consists of a sluice gate swinging in a suitable sluice way upon horizontal gudgeons. The axis of the gudgeons is somewhat below the centre of the surface of the gate, so that up to a certain height the pressure of the water tends to close the gate and to keep it closed. As the water rises above a certain point the superior pressure on the upper part of the gate will cause the latter to turn on its axis, opening the sluice, and allowing the water free flow both above and below the gate.

15,554 of 1904.—S. F. K. ALBRECTSEN, J. M. MADSEN, and J. C. MADSEN: *Ball Valves for Water-closet and other Cisterns.*

Ball valves for water-closet and other cisterns, consisting of a cylinder or hollow plug formed with openings through which the supply water passes to and through a perforated cover or plate at the top of the same, and thence down a central tube to the bore or outlet forming the seat of the ball-lever valve or plug.

16,383 of 1904.—J. THOMSON: *Machines for Laying Bricks in Building Walls.*

A brick-laying machine supported upon the wall by means of trucks near each end of the machine, one of the trucks being adapted to rest upon the course of bricks which are in process of being laid, and the other truck being adapted to rest upon the prior laid course of bricks, and the trucks being vertically adjustable so that the machine may be made level no matter which end of the machine is in advance of the other.

17,485 of 1904.—T. QUADRI: *Facing and Paving Tiles, Blocks, and Slabs.*

A method of manufacturing facing and paving tiles, blocks, and slabs, consisting in mixing sawdust with magnesia, of binding the same with sodium chloride solution, or the like, shaping the sterilised wood pulp so formed into tiles, blocks, or slabs, and impregnating the said tiles, blocks, or slabs with tar.

17,968 of 1904.—S. F. PREST: *Manufacture of Various Articles, such as Bricks, Paving Flags, and Artificial Stone.*

The manufacture of various articles, such as bricks, paving flags, artificial stone from slag removed from Bessemer converters or Siemens' furnaces, consisting in grinding or crushing the said slag, separating the magnetic or metallic from the non-magnetic or non-metallic portion, adding slaked lime to the latter, then forming or shaping the same by pressure, and finally hardening the articles by subjecting them, in a closed chamber, to the action of steam at a suitable pressure.

*All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

TO CORRESPONDENTS.

NOTE.—The responsibility of signed articles, letters and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications; and the Editor cannot be responsible for drawings, manuscripts, or other documents, sent to or left at this office, unless he has specially asked for them.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

All communications must be authenticated by the name and address of the sender, whether for publication or not. No notice can be taken of anonymous communications.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article, or to execute or lend a drawing for publication, is given subject to the approval of the article or drawing, when received, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and not to the Editor.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

October 3.—By PEIRCE & THORPE (at Hinckley).

Barwell, etc., Leicester.—Freehold farmhouse and 115 acres	£3,750

October 6.—By W. LUDLOW & BRISCOE (at Birmingham).

Studley, etc., Warwick.—"Greenhill Farm," 105 a. 0 r. 13 p., f., y.r. 75*l.*	1,550

October 8.—By SPELMANS' (at Norwich).

Norwich.—70, Upper St. Giles-st. and six cottages and tenements adjoining, f., p.	2,000
Eaton, two freehold building sites	780
Alburgh, etc., Norfolk.—"Burlingham Lodge" and "Burnt Oak" farms, 204 a. 2 r. 3 p., f., y.r. 126*l.*	1,600

By J. CARTER, JONAS, & SONS (at Cambridge).

Foxton, Cambs.—Freehold allotment land, 79 a. 0 r. 17 p.	4,000
"Hopper Fields," 101 a. 2 r. 29 p., f.	2,750
Burwell, Cambs.—Copyhold arable land, 6 acres	100

By T. W. GAZE & SON (at Norwich).

Carleton Rode, Norfolk.—"The Old Hall Farm," 151 a. 0 r. 16 p., f., y.r. 130*l.*	1,720

October 10.—By SCOBELL & LAKE.

Oxford-street.—17, Castle-st. East (a.), u.t. 26 yrs., g.r. 15*l.*, y.r. 100*l.*	980
18, Castle-st. East (a.), and 7a, Marylebone-passage, u.t. 26 yrs., g.r. 15*l.*, y.r. 130*l.*	1,225
Clapton.—147, 149, and 151, Elderfield-rd., u.t. 74 yrs., g.r. 15*l.*, w.r. 117*l.*	740
9, 11, and 13, Sewdley-st., u.t. 71 yrs., g.r. 12*l.*, w.r. 117*l.*	850
1, 3, and 5, Chippendale-st., u.t. 71 yrs., g.r. 12*l.*, w.r. 111*l.* 16s.	765

October 11.—By DAVID BURNETT & CO.

Wood Green.—High-rd., l.g. rents 18*l.*, u.t. 81 yrs., g.r. 5*l.*	240
Waldegrave-rd., l.g. rents 18*l.*, u.t. 81 yrs., g.r. 6*l.*	215
Coleraine-rd., l.g. rents 18*l.*, u.t. 81 yrs., g.r. 6*l.*	210
Finchley.—Squire's-la., freehold building land, 6½ acres	3,500
Bow-la., a freehold building plot	400
Squire's-la., etc., freehold building land, 3½ acres	2,750
Great North-rd., a corner building site, f.	2,020

By DEBENHAM, TEWSON, & CO.

Norwood.—1, Chapel-rd., u.t. 34 yrs., g.r. 3*l.*, y.r. 36*l.*	340
32, Chapel-rd. (a.), f., y.r. 52*l.*	600
Epsom, Surrey.—36, Station-rd., f., y.r. 38*l.*	650

By RUTLEY, SON, & VINE.

St. Pancras.—43 to 55 (odd), Euston-buildings (flats), f., e.r. 1.183*l.* £10,000
Holloway.—59, Tufnell-pk.-rd., u.t. 59½ yrs., g.r. 8*l.*, p. 440
Camden Town.—116 and 126, Camden-st., u.t. 35 yrs., g.r. 12*l.*, y.r. 100*l.* 1,010
Hampstead-road.—5, Rutland-st., u.t. 19½ yrs., g.r. 20*l.*, p. 240

By WALTON & LEE (at Newcastle).

Thornbrough, Northumberland.—The Thornbrough Estate, 910 a. 1 r. 19 p., f. (in one lot) 33,000

By ORGILL, MARKS, & LAWRENCE (at Masons' Hall Tavern).

Aldgate. — High-st., "Aldgate Distillery" (otherwise "Coach and Horses" p.h.), u.t. 39½ yrs., y.r. 85*l.*, with goodwill 4,500

October 12.—By EASTMAN BROS.

Sydenham.—Newlands-pk., freehold building site 380

By G. E. LUCK.

Hornsey.—76 and 78, Westfield-rd., f., y.r. 59*l.* 16*s.* 585

By G. HEAD & CO.

City-road.—Nos. 185 to 191 (odd) (s.), area 29,000 ft., f., y.r. 891*l.* 17,000
Hoxton.—27, 28, and 29, Britannia-st., also schoolroom adjoining, area 2,760 ft., f., y.r. 96*l.* 1,210
Britannia-st., "The Crown and Sceptre" p.h., f., y.r. 90*l.* 2,600
31 to 55, Britannia-st. (s.), and 39 and 41, Nile-st., area 4,630 ft., f., y.r. 238*l.* 3,125
36 to 45, Britannia-st., area 8,720 ft., f., y.r. 224*l.* 3,395
89 to 94, Britannia-st. (s.), and 35 and 37, Nile-st., area 5,580 ft., f., y.r. 279*l.* 3,300
Britannia-st., "The Crown and Anchor" b.h., f., y.r. 45*l.* 900
97 to 100, Britannia-st. (s.), and 38, 40, and 42, Nile-st., area 5,740 ft., f., g.r. 267*l.* .. 3,300
Peckham.—104 and 106, Rye-la. (s.), f., y.r. 145*l.* 3,100
Leyton.—217, Beaumont-rd. ("Beaumont Laundry"), beneficial lease for 16 yrs., y.r. 165*l.* (with goodwill, plant, machinery, etc.) 710
Alresford, Hants.—"The Weir Laundry," beneficial lease for 18 yrs., y.r. 100*l.* (with goodwill, plant, machinery, etc.) 150

By WRIGHT & SCRUBY (at Cambridge).

Cambridge.—Trumpington, "St. Mary's," and 0 a. 1 r. 6 p., f., e.r. 60*l.* 565

October 13.—By H. J. BLISS & SONS.

Mile End.—42 and 44, Sceptre-st., w.r. 57*l.* 4*s.*; also l.g. rents 16*l.*, u.t. 25½ yrs., g.r. 22*l.* 300
Bethnal Green.—21 to 33 (odd), Warley-st., f., w.r. 218*l.* 8*s.* 2,115

By CHESTERTON & SONS.

South Kensington.—3 and 4, Spear-mews, u.t. 68½ yrs., g.r. 7*l.*, y.r. 74*l.* 830
3, Farnell-mews, u.t. 68½ yrs., g.r. 8*l.*, y.r. 55*l.* 510
Fulham.—17, 18, and 23, Anselm-rd., u.t. 68½ yrs., g.r. 12*l.*, w.r. 126*l.* 8*s.* 870
Shepherd's Bush.—17 and 19, Bloemfontein-av., u.t. 75½ yrs., g.r. 10*l.*, y.r. 73*l.* 12*s.*.. 725
Southend, Essex.—The Grove, freehold corner building site 100
Notting Hill.—108 and 110, Holland Park-av., u.t. 18 yrs., g.r. 10*l.*, y.r. 200*l.* 1,740

By E. COLE & SON.

Bethnal Green.—346 and 348, Old Ford-rd., u.t. 49½ yrs., g.r. 8*l.*, w.r. 82*l.* 8*s.* 760

By C. C. & T. MOORE.

Forest Gate.—15 and 17, Belton-rd. (factory, etc.), u.t. 83 yrs., g.r. 12*l.*, e.r. 120*l.* 320
Upton Park.—Neville-rd., "Neville-rd. Works," area 13,000 ft., f., e.r. 20*l.* 1,150
Leytonstone.—518 and 522, High-rd., u.t. 67 yrs., g.r. 12*l.*, y.r. 60*l.* 630
55, Ranelagh-rd., u.t. 87 yrs., g.r. 4*l.*, w.r. 26*l.* 200

By NEWBON, EDWARDS, & SHEPHARD.

Hornsey.—Wightman-rd., l.g. rents 13*l.*, reversion in 83 yrs. 330
Kentish Town.—143, Prince of Wales-rd., f., e.r. 45*l.* 745
117, Prince of Wales-rd., u.t. 40 yrs., g.r. 5*l.* 10*s.*, y.r. 40*l.* 410
138, 140, and 150, Prince of Wales-rd., u.t. 40 yrs., g.r. 15*l.* 10*s.*, y.r. 120*l.* 1,250
Haverstock Hill.—14, Rochford-st. (s.), u.t. 60 yrs., g.r. 7*l.*, e.r. 40*l.* 280
Camden Town.—264, Camden-rd., u.t. 34½ yrs., g.r. 6*l.*, e.r. 80*l.* 525
Hornsey Rise.—35, Hanley-rd., f., y.r. 40*l.* .. 575

By DANIEL WATNEY & SONS.

Stepney.—Hardinge-st., etc., area 22,240 ft., also four railway arches, building lease for 80 yrs., let at p.a. 190

By STIMSON & SONS.

Shepherd's Bush.—6 to 12 (even), Southbrook-st., u.t. 47¾ yrs., g.r. 17*l.* 12*s.*, w.r. 148*l.* 4*s.* 620
32, 36, 37, and 47, Southwark-st., u.t. 59½ yrs., g.r. 18*l.*, w.r. 196*l.* 6*s.* 705
64, Stowe-rd., u.t. 62¾ yrs., g.r. 6*l.* 10*s.*, w.r. 39*l.* 215
12 and 14, Wilton-rd., u.t. 55 yrs., g.r. 12*l.*, w.r. 72*l.* 16*s.* 435
Bromley-by-Bow.—103, Devons-rd. (s.), f., y.r. 40*l.* 490
206, 208, and 212, Devons-rd. (s.), u.t. 58 yrs., g.r. 12*l.*, y.r. 135*l.* 815
304, 310, 312, and 314, Devons-rd. (s.), u.t. 96½ yrs., g.r. 24*l.*, y.r. 173*l.* 12*s.* 940
16, 17, 17A, and 18, Weston-st., f., w.r. 104*l.* 920
Peckham.—24, Nelson-sq., u.t. 25½ yrs., g.r. 6*l.* 6*s.*, w.r. 33*l.* 16*s.* 165
Old Kent-road.—12 to 16, Osborne's-buildings, f., w.r. 106*l.* 4*s.* 710
New Cross.—4, Reaston-st. (with workshop), u.t. 71 yrs., g.r. 10*s.*, p. 500
Streatham.—1 and 3, Tankerville-rd., u.t. 75 yrs., g.r. 18*l.*, e.r. 100*l.* 725
Walworth.—2, 4, 6, 8, 24, 26, and 35, Tisdall-pl., u.t. 7½ yrs., g.r. 16*l.*, w.r. 149*l.* 10*s.*.. 180
Eltham, Kent.—12, Court-yd. (the post office), u.t. 40 yrs., g.r. 4*l.* 7*s.* 6*d.*, y.r. 62*l.* 625

By J. A. & W. THARP.

Dalston.—53, Shrubland-gr., u.t. 41½ yrs., g.r. 5*l.*, e.r. 35*l.* £320
Muswell Hill.—Sidney-rd., a freehold building plot 125

By EDWIN EVANS (at Battersea).

Fulham.—44, Kinnoul-rd., f., w.r. 39*l.* 383
Clapham Common.—114, North Side, u.t. 86 yrs., g.r. 13*l.* 5*s.*, e.r. 75*l.* 775
Wandsworth.—15 and 17, East Hill (s.), f., y.r. 100*l.* 1,215
Battersea.—10, Falcon-ter., u.t. 73 yrs., g.r. 5*l.* 5*s.*, y.r. 30*l.* 320
14 and 18, St. John's Hill-gr., f., w.r. 78*l.* 790
9, Mallinson-rd., u.t. 63 yrs., g.r. 5*l.*, y.r. 32*l.* 280
Church-rd. (rear of), l.g.r. 8*l.*, reversion in 72½ yrs. 190
Streatham.—6, Penrith-st., u.t. 93 yrs., g.r. 6*l.* 15*s.*, p. 320
4, Biegborough-rd., f., y.r. 48*l.* 655
2, Biegborough-rd., area 6,840 ft., u.t. 93 yrs., g.r. 10*l.*, y.r. 48*l.* 515
Tooting.—1 to 10, Courtney-rd. (flats), u.t. 99 yrs., g.r. 27*l.* 10*s.*, w.r. 174*l.* 4*s.* 800
Norbury.—117, Melfort-rd., and four houses adjoining, u.t. 97½ yrs., g.r. 32*l.*, p. 1,445
30, Melfort-rd., u.t. 98 yrs., g.r. 8*l.*, y.r. 45*l.* 450

October 14.—By ROGERS BROS.

Peckham.—29 to 35 (odd), Carlton-gr., u.t. 50½ yrs., g.r. 23*l.*, w.r. 148*l.* 4*s.* 1,135

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beerhouse; p.h. for public-house; o. for offices; s. for shops; ct. for court.

MEETINGS.

FRIDAY, OCTOBER 21.

Institution of Mechanical Engineers.—8 p.m.

TUESDAY, OCTOBER 25.

Institute of Sanitary Engineers, Ltd. (*Lectures in Practical Sanitary Science*).—Mr. R. Horton on "Details of Plumber's Work, House Drainage, and Sanitary Appliances," I. 7 p.m.

THURSDAY, OCTOBER 27.

Architectural Association.—Conversazione, 18, Tufton-street, Westminster. 8 p.m.

Carpenters' Company, London Wall (*Lectures on Sanitary Building Construction*).—Professor F. M. Simpson on "Building Materials and Modes of Using Them—the Decay and Preservation of Timber." 7.30 p.m.

SATURDAY, OCTOBER 29.

Junior Institution of Engineers.—Visit at 3 p.m. to the National Physical Laboratory, Bushy House, Teddington.

Sanitary Institute (*Provincial Sessional Meeting at Southampton*).—Discussion, to be opened by Dr. R. E. Lander, on "Infectious Fever Hospitals." 11 a.m.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£ s. d.			
Hard Stocks	1 14 0	per 1000	alongside, in river.	
Rough Stocks and Grizzles	1 13 0	"	"	"
Facing Stocks ...	2 12 0	"	"	"
Shippers	2 10 0	"	"	"
Flettons	1 8 0	"	at railway depôt.	
Red Wire Cuts ...	1 14 0	"		
Best Fareham Red	3 12 0	"	"	"
Best Red Pressed Ruabon Facing	5 0 0	"	"	"
Best Blue Pressed Staffordshire ...	4 4 0	"	"	"
Do. Bullnose	4 10 0	"	"	"
Best Stourbridge Fire Bricks.....	4 8 0	"	"	"
GLAZED BRICKS.				
Best White and Ivory Glazed Stretchers	13 0 0	"	"	"
Headers	12 0 0	"	"	"
Quoins, Bullnose, and Flats.....	17 0 0	"	"	"
Double Stretchers	19 0 0	"	"	"
Double Headers...	16 0 0	"	"	"
One Side and two Ends	19 0 0	"	"	"
Two Sides and one End	20 0 0	"	"	"
Splays, Chamferred, Squints	20 0 0	"	"	"
Best Dipped Salt Glazed Stretchers, and Header	12 0 0	"	"	"
Quoins, Bullnose, and Flats.....	14 0 0	"	"	"
Double Stretchers	15 0 0	"	"	"
Double Headers...	14 0 0	"	"	"
One Side and two Ends	15 0 0	"	"	"
Two Sides and one End	15 0 0	"	"	"
Splays, Chamferred, Squints	14 0 0	"	"	"
Second Quality White and Dipped Salt Glazed	2 0 0	"	less than best.	

BRICKS, &c.—(*continued*).

	s. d.		
Thames and Pit Sand.....	7 3	per yard,	delivered.
Thames Ballast.....	6 0	"	"
Best Portland Cement	30 0	per ton,	"
Best Ground Blue Lias Lime	20 0	"	"

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime.....12s. 0d. per yard, delivered.
Stourbridge Fireclay in sacks 27s. 6d. per ton at rly. dpt.

STONE.

	s. d.		
BATH STONE—delivered on road waggons, Paddington Depôt	1 6½	per ft. cube..	
Do. do. delivered on road waggons, Nine Elms Depôt	1 8½	"	"
PORTLAND STONE (20 ft. average)—			
Brown Whitbed, delivered on road waggons, Paddington depôt, Nine Elms depôt, or Pimlico Wharf...	2 1	"	"
White Basebed, delivered on road waggons, Paddington depôt, Nine Elms depôt, or Pimlico Wharf...	2 2½	"	"

	s. d.			
Ancaster in blocks	1 11	per ft. cube,	deld. rly. depôt..	
Beer "	1 6	"	"	
Greenshill "	1 10	"	"	
Darley Dale in blocks...	2 4	"	"	
Red Corsehill "	2 5	"	"	
CloseburnRedFreestone	2 0	"	"	
Red Mansfield "	2 4	"	"	
YORK STONE—*Robin Hood Quality.*				
Scappled random blocks	2 10		"	"
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 3	per ft. super.		"
6 in. rubbed two sides ditto, ditto	2 6	"		"
3 in. sawn two sides slabs (random sizes)	0 11½	"		"
2 in. to 2½ in. sawn one side slabs (random sizes)	0 7½	"		"
1½ in. to 2 in. ditto, ditto	0 6	"		"
HARD YORK—				
Scappled random blocks	3 0	per ft. cube,		"
6 in. sawn two sides, landings to sizes (under 40 ft. super.)	2 8	per ft. super.		"
6 in. rubbed two sides ditto	3 0	"		"
3 in. sawn two sides (slabs random sizes)	1 2	"		"
2 in. self-faced random flags	0 5	"		"
Hopton Wood (Hard Bed) in blocks	2 3	per ft. cube. deld. rly. depôt..		
" " "	6 in. sawn both sides landings	2 7	per ft. super. deld. rly. depôt..	
" " "	3 in. do.	1 2½	"	"

SLATES.

in.	in.	£ s. d.		
20 × 10 best blue Bangor		13 2	6 per 1000 of 1200 at r. d.	
20 × 12	" "	13 17 6	"	"
20 × 10 first quality	"	13 0 0	"	"
20 × 12	" " "	13 15 0	"	"
16 × 8	" " "	7 5 0	"	"
20 × 10 best blue Portmadoc		12 12 6	"	"
16 × 8	"	6 12 6	"	"
20 × 10 best Eureka unfading green .		15 17 6	"	"
20 × 12	" "	18 7 6	"	"
18 × 10	" "	13 5 0	"	"
16 × 8	" "	10 5 0	"	"
20 × 10 permanent green		11 12 6	"	"
18 × 10	" "	9 12 6	"	"
16 × 8	" "	6 12 6	"	"

TILES.

	s. d.		
Best plain red roofing tiles .	42 0	per 1000 at rly. depôt..	
Hip and Valley tiles ...	3 7	per doz.	" "
Best Broseley tiles.....	50 0	per 1000	" "
Do. Ornamental tiles	52 6	"	" "
Hip and Valley tiles ...	4 0	per doz.	" "
Best Ruabon red, brown, or brindled do. (Edwards)	57 6	per 1000	" "
Do. Ornamental do	60 0	"	" "
Hip tiles	4 0	per doz.	" "
Valley tiles	3 0	"	" "
Best Red or Mottled Stafford shire do. (Peakes).....	51 9	per 1000	" "
Do. Ornamental do.....	54 6	"	" "
Hip tiles	4 1	per doz.	" "
Valley tiles	3 8	"	" "
Best "Rosemary" brand plain tiles.....	48 0	per 1000	" "
Best Ornamental tiles	50 0	"	" "
Hip tiles	4 0	per doz.	" "
Valley tiles	3 8	"	" "
Best "Hartshill" brand plain tiles, sand faced.	50 0	per 1000	" "
Do. pressed.....	47 6	"	" "
Do. Ornamental do	50 0	"	" "
Hip tiles	4 0	per doz.	" "
Valley tiles	3 6	"	" "

WOOD.

	At per standard. £ s. d.	£ s. d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in	15 10 0	16 10 0
Deals: best 3 by 4.....	14 10 0	15 10 0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11 10 0	12 10 0
Battens: best 2½ by 6 and 3 by 6..	0 10 0	less than 7 in. and 8 in.
Deals: seconds	1 0 0	less than best
Battens: seconds	0 10 0	" "
2 in. by 4 in. and 2 in. by 6 in....	9 0 0	9 10 0
2 in. by 4½ in. and 2 in. by 5 in....	8 10 0	9 10 0
Foreign Sawn Boards— 1 in. and 1¼ in. by 7 in.	0 10 0	more than battens.
¾ in.	1 0 0	"

WOOD (*continued*).

	At per load of 50 ft. £ s. d.	£ s. d.
Fir timber: best middling Danzig or Memel (average specification)	4 10 0	5 0 0
Seconds	4 5 0	4 10 0
Small timber (8 in. to 10 in.)	3 12 6	3 15 0
Small timber (6 in. to 8 in.)	3 0 0	3 10 0
Swedish balks	2 15 0	3 0 0
Pitch-pine timber (30 ft. average)	3 5 0	3 15 0

JOINERS' WOOD.	At per standard.	
White Sea: first yellow deals, 3 in. by 11 in	23 0 0	24 0 0
3 in. by 9 in.	21 0 0	22 10 0
Battens, 2½ in. and 3 in. by 7 in.	17 C 0	18 10 0
Second yellow deals, 3 in. by 11 in	18 10 0	20 0 0
" " 3 in. by 9 in.	17 10 0	19 0 0
Battens, 2½ in. and 3 in. by 7 in.	13 10 0	14 10 0
Third yellow deals, 3 in. by 11 in. and 9 in.	15 10 0	16 10 0
Battens, 2½ in. and 3 in. by 7 in.	11 10 0	12 10 0
Petersburg: first yellow deals, 3 in. by 11 in.	21 0 0	22 10 0
Do. 3 in. by 9 in.	18 0 0	19 10 0
Battens	13 10 0	15 0 0
Second yellow deals, 3 in. by 11 in.	16 0 0	17 0 0
Do. 3 in. by 9 in.	14 10 0	16 0 0
Battens	11 0 0	12 10 0
Third yellow deals, 3 in. by 11 in.	13 10 0	14 0 0
Do. 3 in. by 9 in.	13 0 0	14 0 0
Battens	10 0 0	11 0 0
White Sea and Petersburg:—		
First white deals, 3 in. by 11 in.	14 10 0	15 10 0
" " 3 in. by 9 in.	13 10 0	14 10 0
Battens	11 0 0	12 0 0
Second white deals, 3 in. by 11 in.	13 10 0	14 10 0
" " 3 in. by 9 in.	12 10 0	13 10 0
" " battens	9 10 0	10 10 0
Pitch-pine: deals	16 10 0	20 0 0
Under 2 in. thick extra	0 10 0	1 0 0
Yellow Pine—First, regular sizes	40 0 0	upwards.
Oddments	28 0 0	"
Seconds, regular sizes	30 0 0	"
Yellow Pine oddments	25 0 0	"
Kauri Pine—Planks, per ft. cube	0 3 6	0 5 0
Danzig and Stettin Oak Logs—		
Large, per ft. cube	0 2 6	0 3 6
Small " "	0 2 3	0 2 6
Wainscot Oak Logs, per ft. cube.	0 5 0	0 5 6
Dry Wainscot Oak, per ft. sup. as inch	0 0 8	0 0 9
¼ in. do. do.	0 0 7	—
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch	0 0 9	0 1 0
Selected, Figury, per ft. sup. as inch	0 1 6	0 2 6
Dry Walnut, American, per ft. sup. as inch	0 0 10	0 1 0
Teak, per load	17 0 0	21 0 0
American Whitewood Planks, per ft. cube	0 4 0	—
Prepared Flooring—	Per square.	
1 in. by 7 in. yellow, planed and shot	0 13 6	0 17 6
1 in. by 7 in. yellow, planed and matched	0 14 0	0 18 0
1¼ in. by 7 in. yellow, planed and matched	0 16 0	1 0 0
1 in. by 7 in. white, planed and shot	0 12 0	0 14 6
1 in. by 7 in. white, planed and matched	0 12 6	0 15 0
1¼ in. by 7 in. white, planed and matched	0 15 0	0 16 6
¾ in. by 7 in. yellow, matched and beaded or V-jointed brds.	0 11 0	0 13 6
1 in. by 7 in. do. do.	0 14 0	0 18 0
¾ in. by 7 in. white do. do.	0 10 0	0 11 6
1 in. by 7 in. do. do. do.	0 11 6	0 13 6

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £ s. d.	£ s. d.
Rolled Steel Joists, ordinary sections	6 5 0 ...	7 5 0
Compound Girders, ordinary sections	8 2 6 ...	9 5 0
Angles, Tees and Channels, ordinary sections	7 17 6 ...	8 17 0
Flitch Plates	8 5 0 ...	8 15 0
Cast Iron Columns and Stanchions including ordinary patterns	7 2 6 ...	8 5 0

METALS.

	Per ton, in London. £ s. d.	£ s. d.
Iron—		
Common Bars	7 5 0 ...	7 15 0
Staffordshire Crown Bars, good merchant quality	7 15 0 ...	8 5 0
Staffordshire "Marked Bars"	10 0 0 ...	—
Mild Steel Bars	8 15 0 ...	9 5 0
Hoop Iron, basis price	9 5 0 ...	9 10 0
" Galvanized	17 10 0 ...	—
("And upwards, according to size and gauge.)		
Sheet Iron, Black—		
Ordinary sizes to 20 g.	9 15 0 ...	—
" " 24 g.	10 15 0 ...	—
" " 26 g.	12 5 0 ...	—
Sheet Iron, Galvanised, flat, ordinary quality—		
Ordinary sizes—6 ft. by 2 ft. to 3 ft. to 20 g.	12 15 0 ...	—
Ordinary sizes to 22 g. and 24 g.	13 5 0 ...	—
" " 26 g.	14 5 0 ...	—
Sheet Iron, Galvanised, flat, best quality—		
Ordinary sizes to 20 g.	16 0 0 ...	—
" " 22 g. and 24 g.	16 10 0 ...	—
" " 26 g.	18 0 0 ...	—
Galvanised Corrugated Sheets—		
Ordinary sizes 6 ft. to 8 ft. 20 g.	12 10 0 ...	—
" " 22 g. and 24 g.	13 0 0 ...	—
" " 26 g.	13 15 0 ...	—
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker	11 15 0 ...	—
Best Soft Steel Sheets, 22 g. & 24 g.	12 15 0 ...	—
" " 26 g.	14 0 0 ...	—
Cut nails, 3 in. to 6 in.	9 0 0 ...	9 10 0

(Under 3 in., usual trade extras.)

LEAD, &c.

	Per ton, in London. £ s. d.	£ s. d.
LEAD—Sheet, English, 3lb. and up	14 15 0 ...	—
Pipe in coils	15 5 0 ...	—
Soil pipe	17 15 0 ...	—
Compo pipe	17 15 0 ...	—
ZINC—Sheet—		
Vieille Montagne ton	27 10 0 ...	—
Silesian	27 5 0 ...	—
COPPER—		
Strong Sheet per lb.	0 0 10 ...	—
Thin " "	0 0 11 ...	—
Copper nails "	0 0 10 ...	—
BRASS—		
Strong Sheet "	0 0 9½ ...	—
Thin " "	0 0 10 ...	—
TIN—English Ingots "	0 1 3½ ...	—
SOLDER—Plumbers' "	0 0 6½ ...	—
Tinmen's "	0 0 8 ...	—
Blowpipe "	0 0 9 ...	—

ENGLISH SHEET GLASS IN CRATES.

15 oz. thirds	2¾d. per ft. delivered.
" fourths	2d. " "
21 oz. thirds	3¾d. " "
" fourths	3d. " "
26 oz. thirds	4¼d. " "
" fourths	3¾d. " "
32 oz. thirds	5¼d. " "
" fourths	5d. " "
Fluted Sheet, 15 oz.	3¾d. " "
" 21 oz.	4¼d. " "
½ Hartley's Rolled Plate	2d. " "
⅝ " " " "	2¼d. " "
¼ " " " "	2½d. " "

OILS, &c.		£ s. d.
Raw Linseed Oil in pipes	per gallon	0 1 7
" " " in barrels	"	0 1 8
" " " in drums	"	0 1 10
Boiled " " in pipes	"	0 1 9
" " " in barrels	"	0 1 10
" " " in drums	"	0 2 0
Turpentine, in barrels	"	0 3 4
" in drums	"	0 3 6
Genuine Ground English White Lead	per ton	18 15 0
Red Lead, Dry	"	18 10 0
Best Linseed Oil Putty	per cwt.	0 6 6
Stockholm Tar	per barrel	1 12 0

VARNISHES, &c.	Per gallon. £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 0
Superfine Hard-drying Oak, for seats of Churches	0 14 0
Fine Elastic Carriage	0 12 6
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 16 0
Finest Pale Durable Copal	0 18 0
Extra Pale French Oil	1 1 0
Eggshell Flatting Varnish	0 18 0
White Copal Enamel	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size	0 10 6
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 6
Berlin Black	0 16 0
Knotting	0 10 0
French and Brush Polish	0 10 0

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

BARKING TOWN.—For erecting seventy-two workmen's cottages in King Edward's-road, for the Urban District Council. Mr. C. J. Dawson, architect, East-street, Barking:—

J. Guttridge	£14,976	E. Good & Sons, Ltd.	£12,132
J. K. Jacobs	14,760	S. E. Moss	11,520
Martin, Wells, & Co.	14,332	Hall & Jacobs	11,520
H. J. Carter	13,546	F. W. Bull	11,340
Chambers Bros.	13,464	J. C. Garbett	11,448
W. E. Westgate	12,420	Stedman & Co., Forest Gate*	10,764
J. F. Holliday	12,319	Griffiths & Co.	10,260
J. Gregory	12,204		

BASINGSTOKE.—For sinking a well, driving adits, and pumping at West Ham, for the Water Supply Committee. Mr. F. R. Phipps, Borough Surveyor and Waterworks Engineer, Town Hall, Basingstoke:—

G. Lawson	£2,022 0 0	F. W. Trimm	£1,630 0 0
Grace & Son	2,914 15 0	R. D. Batchelor	1,594 4 0
Timmins & Son	2,440 0 0	A. E. Nunn	1,324 3 4
Duke & Ockenden	2,235 0 0	J. Riley	1,319 15 0
A. F. Osenton	2,174 5 0	J. H. Vickers	1,285 10 0
F. J. Price	1,918 10 0	H. J. Danson	1,110 0 0
J. W. Titt	1,820 15 0	Castle & Co.	981 1 8
Tilley & Son	1,784 15 0	Cunningham, Forbes, & Co., Fleet, Hants*	758 10 0†

BATH.—For erecting a motor garage, for Mr. F. C. Wallace, Bath. Mr. E. S. Payton, architect and surveyor, 3, Wood-street, Bath:—

Wells & Sons	£835 0	C. Wibley	£597 0
Erwood & Morris	698 10	W. Webb, Railway-place, Bath*	548 0
F. B. Parsons	698 0		

BRIDGWATER (Somerset).—For shops and offices, King-street, for Mr. Albert Lewis. Mr. John Wyatt Hill, architect. Quantities supplied:—

Geen	£2,068	Westbury & Jarman	£1,680
Stockham	2,039	Gleed Bros.	1,670
Bryer	1,800	Fursland‡	1,665

‡ Recommended for acceptance.

[Architect's estimate, £1,715.]

BRADFORD.—For erecting a factory in Burnett-street, for Mr. J. Scott. Mr. E. L. Gaunt, architect, 5, Charles-street, Bradford:—

Mason and Bricklayer: C. Booth & Sons, Lidget-green, Bradford	£1,098 0 0
Carpenter and Joiner: Thompson Bros., Great Horton, Bradford	345 0 0
Iron Work: H. Barrett & Sons, Thornton-road, Bradford	220 0 0
Plumbing and Heating: F. Higginbotham, Undercliffe-lane, Bradford	158 13 0
Plastering and Concreting: E. Jones & Son, Barkerend-road, Bradford	80 10 9

DARTMOUTH.—For erecting two houses, Mayor's-avenue, for Mr. J. Way. Mr. E. H. Back, architect and surveyor, Dartmouth. Quantities by architect:—

Wills & Anderson	£549 0 0	R. C. Pillar & G. Row, Dartmouth*	£495 15 6
Back & Watts	524 15 6		

DURHAM.—For erecting five dwelling houses, New-street, Aliargate Building Estate, for the Durham Co-operative Society, Ltd. Mr. G. Ord, architect and surveyor, 16, The Avenue, Durham. Quantities by architect:—

Mason: J. G. Bradley, The Avenue	£592 0 0
Joiner: W. Buckley, John-street	267 2 6
Slater: W. T. Beakey, Co-op.-terrace	54 10 0
Plumber: Heron & Brown, North-road	68 9 0
Plasterer: Wilson & Clark, New Elvet	58 15 0
Painter: G. Smurthwaite & Son, Silver-street	30 0 0

[All Durham City.]

ERITH.—For erection of car-sheds, workshops, and offices, for the Urban District Council. Quantities by Mr. W. Egerton, 12, Queen's-road, Erith:—

W. Martin	£8,997 0 0
Mayoh & Haley	8,836 1 2
Perry & Co.	8,626 0 0
Enness Bros.	8,364 0 0
Martin, Wells, & Co., Ltd.	8,200 0 0
Hughes & Stirling	8,098 0 0
R. E. Nightingale	7,730 0 0
J. Ellingham & Sons	7,720 0 0
Kirk & Randall	7,694 0 0
F. Spencer & Son	7,649 0 0
W. Pattinson & Sons	7,643 0 0
W. F. Blay	7,636 18 6
F. Miskin, Ltd.	7,620 15 1½
Thomas & Edge	7,497 0 0
J. Rothwell & Sons	7,455 0 0
Foster Bros.	7,417 0 0
Friday & Long	7,343 12 0
G. H. Gunning & Sons, The Mount, Erith*	7,215 0 0
J. & M. Patrick	7,197 0 0
J. Shelbourne & Co.	7,158 0 0

EXETER.—For erecting car depôt in Heavitree-road, for the Corporation. Mr. T. Moulding, City Engineer and Surveyor, 7, Southernhay West, Exeter:—

G. Setter	£5,340 0 0	A. N. Coles	£4,290 14 5
Willey & Co., Ltd.	5,143 0 0	W. E. Blake, Sutton Building-yard, Plymouth*	4,265 0 0
W. Brealy	5,107 0 0		
Woodman & Son	5,017 0 0		

[Engineer's estimate, £4,750.]

GRIMSBY.—For the erection of two corrugated iron buildings at the Small-pox Hospital, Laceby. Mr. H. Gilbert Whyatt, Borough Engineer:—

T. Pearce	£400 0 0	G. P. Banbury	£193 0 0
Bruce & Still	380 0 0	Wire-Wove Roofing Co.	190 0 0
Brown & Lilly, Ltd.	323 0 0	P. Chick	187 0 0
R. Iles, Ltd.	277 16 3	T. R. Waterman	184 0 0
Walker Bros.	270 0 0	Harbrow	184 0 0
D. Rowell	256 10 0	Hawkins & Co.	184 0 0
Reay	246 0 0	J. A. Thomas	175 0 0
F. Swallow	239 12 0	T. Mundy	166 0 0
Humphreys, Ltd.	237 0 0	Ginger, Lee, & Co.	162 0 0
Allison	197 16 0	J. McManus	154 0 0
Croggon & Son	195 10 0	F. Smith & Co., London, E.*	148 0 0
Mitson & Harrison	195 0 0		

GRIMSBY.—For extension of watermains. Mr. H. Gilbert Whyatt, Borough Engineer:—

Hewins & Goodhand	£179 0 0	Grimsby Waterworks Co.	£155 0 0
Blakeborough & Co.	168 0 0	E. Tabor	147 14 0
W. Burkitt	162 11 6	B. Robinson	136 10 0
		J. Sangwin, Hull*	96 8 0

GRIMSBY.—For the erection of two greenhouses, for the Parks Committee. Mr. H. Gilbert Whyatt, Borough Engineer:—

	With Heating Apparatus. £ s. d.	£ s.	With Heating Apparatus, Foundations, etc. complete. £ s. d.
Hope & Sons	129 10 0	163 10	—
W. Cooper, Ltd.	115 0 0	147 10	—
Skinner, Board, & Co.	120 0 0	147 0	—
Messenger & Co.	103 15 0	131 15	—
Boulton & Paul	—	128 0	—
J. A. Thomas	—	127 14	152 5 6
Halliday & Co.	104 10 0	126 15	—
J. Cox	95 0 0	126 10	—
Wrinch & Sons	95 13 0	122 13	—
Jevon Co.	88 0 0	117 0	—
W. Duncan Tucker	88 0 0	114 15	—
T. R. Waterman	77 0 0	113 10	148 0 0
Richardson & Co.	90 5 0	113 5	—
E. Trafford	80 0 0	—	—
Emerson Bros., Grimsby*	58 4 0	88 4	139 16 0
[Borough Engineer's Estimate	82 11 6	103 5	145 0 0]

HENDON.—For 204 yds. of pipe sewer and 204 yds. surface-water drain, Gutters Hedge-lane, for the Urban District Council. Mr. S. Slater Grimley, Engineer, Council Offices, Hendon, N.W.:—

T. Adams	£623 5 0	A. B. Champness, Wealdstone*	£573 0 0
R. Ballard, Ltd.	617 17 6		

TENDERS.—*Continued on page* 429.

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

(For some Contracts, &c., still open, but not included in this List, see previous issues.)

COMPETITIONS.

Nature of Work.	By whom Required.	Premiums.	Designs to be Delivered
*Conversion of School Into a Home	Lambeth Guardians	Not stated	Dec. 20
*School	Croydon Education Committee	Not stated	No date.

CONTRACTS.

Nature of Work or Materials.	By whom Advertised.	Forms of Tenders, etc., supplied by	Tenders to be Delivered
Gable Wall, Gaythorn Gasworks	Manchester Corporation	C. Nickson, Superintendent, Gas Depart., Town Hall, Manchester	Oct. 21
Furniture & Ironmongery, Children's Hm., Mount-st.	Derby Guardians	N. Twigge, Poor Law Offices, Derby	Oct. 22
Exten. of Chancel, Holy Trinity Ch., Stockton-on-Tees	.....	C. S. Errington, A.R.I.B.A. Vict.-bldgs., Grainger-st. W., Nwc.-T.	do.
Water-street Improvement	Radcliffe U.D.C.	Engineer, Council Offices, Radcliffe	do.
Rebuild. Taber., Welsh Wesleyan Chapel, Rhymney	.....	29, Ruthin-gardens, Cardiff	do.
Glazed Earthenware Sewer Pipes	Manchester, etc., Paving Committee	Chief Clerk, Highways Department, Town Hall, Manchester	do.
Pitch and Creosote Oil	do.	do.	do.
Portland Cement	do.	do.	do.
Reconstruct. 4 Houses, etc., Aycliffe, nr. Darlington	Mr. G. Chapman, J.P.	J. C. Worth, Heighington-road, Aycliffe	do.
Machine Tools required at Car-shed	Rochdale Corporation	General Manager, Car-shed, Mellor-street, Rochdale	Oct. 24
Stores, Tramway Committee	Manchester Corporation	J. M. M'Elroy, Tramways Manager, 55, Piccadilly, Manchester	do.
Street Works	Withington U.D.C.	A. H. Mountain, Surveyor, Town Hall, West Didsbury	do.
Two Houses, Machen	.....	F. G. Webb, Architect, Holly Bush, Lower Machen	do.
Sewering, etc., Squire-street, Cheetham	Manchester, etc., Paving Committee	Paving Department, Surveyor's Office, Town Hall, Manchester	do.
Draining, etc., Passages, Ardwick	do.	do.	do.
Draining, etc., Passages, Albany-street, etc.	do.	do.	do.
Additions, etc., to Hopton-grove, Mirfield	Mr. C. Sutcliffe	B. F. Simpson, F.R.I.B.A., 12, Grey-street, Newcastle-on-Tyne	do.
Two Coke Trucks	Accrington Dis. Gas and Water Bd.	C. Harrison, St. James's-street, Accrington	do.
Warehouse, Villiers-street, West Hartlepool	.....	W. Young, Architect, Park-road, West Hartlepool	do.
*Four Through Houses at Bradley, near Huddersfield	.....	E. & C. Brooke, Architects, 6, Huddersfield-road, Brighouse	do.
Mortuary, Braywick-road	Maidenhead Town Council	P. Johns, Borough Surveyor, Guildhall, Maidenhead	do.
Kerbing and Paving, Crawley	Horsham R.D.C.	W. Dengate, 58, Park-street, Horsham	do.
Brass Boiler Tubes	Sec. of State for India in Council	Director-General of Stores, India Office, Whitehall, S.W.	Oct. 25
Twelve Houses at Gilfach, Bargoed	Maesygraig Building Club	W. Harris, Architect, Gilfach, Bargoed	do.
Dust Destructor, etc.	Middleton Corporation	F. Entwistle, Town Clerk, Middleton, Lancs.	do.
Alterations, &c., Redshaw House, Armley	.....	T. A. Buttery & S. B. Birds, Architects, 1, Basinghall-sq., Leeds	do.
Granite	Aldershot U.D.C.	F. C. Uren, Surveyor, Aldershot	do.
Conversion of Closets, etc., Crofton School	.....	J. Vickers Edwards, County Architect, County Hall, Wakefield	do.
Making-up Streets and Passages, Wallasey	Wallasey U.D.C.	District Engineer and Surveyor, Public Offices, Egremont	do.
Making-up Streets and Passages, Seacombe	do.	do.	do.
Making-up Streets and Passages, Egremont	do.	do.	do.
Making-up Streets and Passages, Liscard	do.	do.	do.
Propagating House and Cold Frames	Rochdale General Purposes Com'ittee	S. S. Platt, Borough Surveyor, Town Hall, Rochdale	do.
Altering Premises, 74, Market-place, Whitehaven	Cleator Moor Co-operative Society	55, Church-street, Whitehaven	do.
440 yds. of Cable	Rugby U.D.C.	T. M. Wratislaw, Clerk, Rugby	do.
Culvert over Stell, near Carr House, Seaton-road	West Hart'lepool Corporation	N. F. Dennis, Borough Engineer, West Hartlepool	do.
Granite Spalls, Mitcham	Holborn Guardians	J. A. Battersby, Clerk, Holborn Union Offices, Clerkenwell-road, E.C.	do.
Gangway over Bch. Line of Rly. at Destructor Wks	Glasgow Corporation	Office of Cleansing Department, 38, Cochrane-street, Glasgow	do.
120 Lamps	Dalkey U.D.C.	J. P. Gahan, Clerk, Town Hall, Dalkey	Oct. 26
Private Street Works	Twickenham U.D.C.	F. W. Pearce, Surveyor, Town Hall, Twickenham	do.
Works to Frontages of Labourers' Cottages	South Dublin R.D.C.	T. J. Byrne, A.R.I.B.A., 1, James-street, Dublin	do.
Forty-two 14-in. Cast-Iron Socket Pipes	Winchester Corporation	T. Holt, Town Clerk, Winchester	do.
Iron Building for Brick Plant	West Hartlepool Corporation	N. N. Dennis, Borough Engineer, West Hartlepool	do.
Flooring Swimming Baths, Selby	Selby U.D.C.	Surveyor's Office, Town Hall, Selby	do.
300 Tons of Guernsey Granite Spalls	Wandsworth Guardians	F. W. Piper, Union Offices, St. John's Hill, Wandsworth	do.
Stone-breakers' Shed, etc., at Knutsford Workhouse	Bucklow Guardians	R. J. M'Beath, Architect, Birnam House, Sale	do.
*Erection of Museum Building	Southwark Borough Council	Borough Engineer, Town Hall, Walworth-road, S.E.	Oct. 27
Wards, Union Workhouse, Dudley	The Guardians	A. Marshall, A.R.I.B.A., King-street, Nottingham	do.
Furnishing New Workhouse Buildings	Walsall Union	A. H. Lewis, Clerk, 29, Leicester-street, Walsall	do.
2,350 Super yds. Whin Chip Paving, etc., Willington	Tynemouth R.D.C.	A. S. Dinning, 21, Ellison-place, Newcastle-on-Tyne	do.
Girders, etc., of Bridge over Beverley, etc., Drain	Hull Corporation	A. E. White, City Engineer, Town Hall, Hull	do.
250 yds. of Boundary Walling, etc., Waingate Chapel	.....	T. Kershaw, A.R.I.B.A., L. and Y., Bank-chambers, Halifax	do.
Steel Framework	Dundee Harbour Trustees	J. Thompson, Harbour Engineer, Dundee	do.
270 Tons of Portland Cement	do.	do.	do.
Steel Rails	do.	do.	do.
Paving of New Shed	do.	do.	do.
2,400 Creosoted Redwood Sleepers, Eastern Sohun	do.	do.	do.
172 yds. Wrought-Iron Fencing, Rochester Terrace	Chatham Corporation	C. Day, Borough Surveyor, Town Hall, Chatham	do.
Road-Making, etc., Lawrence's-buildings	Hackney Borough Council	Norman Scorgie, Borough Engineer, Town Hall, Hackney	do.
10-Ton Aveling and Porter Steam Roller	Redditch U.D.C.	B. Perrins, Surveyor, Council House, Redditch	do.
Public Convenience, John-street, Glasgow Green	Glasgow Corporation	Office of Public Works, City-chambers, 64, Cochrane-st., Glasgow	do.
Lavatory, Duke-street, Cattle Market	do.	do.	Oct. 28
Lancashire Boiler, Rumfields Pumping Station	Broadstairs and St. Peter's U.D.C.	P. Griffith, Engineer, 54, Parliament-street, S.W.	do.
Street and Sewer, Lands of Coplaw Hill	Glasgow Coporation	City Engineer, 64, Cochrane-street, Glasgow	do.
Street Improvements	Rhondda U.D.C.	W. J. Jones, Surveyor, Public Offices, Pentre, Rhondda	do.
Tea-room, Heaton-park	Manchester Corporation	City Architect, Town Hall, Manchester	do.
Builder's Work, Underground Convenience, New-sq.	Hull Corporation	A. E. White, City Engineer, Town Hall, Hull	do.
Alterations to Superintendent Registrar's Office, Hull	Sculwater Guardians	T. Beecroft Atkinson, Architect, 11, Trinity House-lane, Hull	Oct. 29
Six Houses, Coombe Lodge Estate	Weston-Sup'r-Mare A.B.C. Syndicate	E. T. Gilmore, Architect and Surveyor, Weston-Super-Mare	do.
300 yds. of Flints	Southwick U.D.C.	G. W. Warr, Surveyor, Council Offices, Southwick, Sussex	do.
*Alters., Repairs, and Painting N.W. Fever Hospital	Metropolitan Asylums Board	Office of Board, Embankment, E.C.	Oct. 30
1,400 yds. of Excavat. & Macadamis., Howdon-lane	Willington Quay U.D.C.	F. Davidson, Engineer, Central-buildings, Wallsend	Oct. 31
Scavenging	Ewell Parish Council	G. Hards, Clerk, High-street, Ewell	do.
875 Yards of 9-in. Sewers, Mortlake-rd., North Sheen	Richmond (Surrey) Town Council	J. H. Brierley, Borough Surveyor, Town Hall, Richmond	do.
New Roads, Hamilton	Caledonian Railway Co.	Engineer to Company, Buchanan-street Station, Glasgow	do.
Wat. Sup. M'ns. Rob'ts, Kitch'ner, Buller-rds., Leiston	Leiston-Cum-Sizewell U.D.C.	J. Baldry, Surveyor, Snape-road, Leiston, Suffolk	do.
Water Supply Mains, Haylings-place, Leiston	do.	do.	do.
Road Works, Homecroft-road, Sydenham	Lewisham Borough Council	Surveyor's Office, Town Hall, Catford	do.
1,000 Tons of Granite	Hastings Corporation	P. H. Palmer, Engineer, Town Hall, Hastings	do.
*Part Construction of Canal Waterway Wall, etc.	Borough of Paddington	Borough Surveyor, Town Hall, Paddington, W.	Nov. 1
217 yds. of Unclimbable Iron Fencing	Aston Guardians	Mr. Whitwell, Architect, 23, Temple-row, Birmingham	do.
Smallpox Hospital, Kilwinning	Joint Com., Ayrshire Northern Dis.	J. & J. Armour, Architects, Irvine	Nov. 2
Council Sch'l, Navigat'n-rd., Broadheath, Altrincham	Cheshire C.C. Education Committee	J. Howarth, Education Offices, Market-street, Altrincham	do.
5,000 yds. of Stoneware Pipe Sewers, Stapenhill, etc.	Burton-on-Trent Corporation	G. T. Lynam, Borough Engineer, Town Hall, Burton	do.
Cast-Iron Rising Main	Portsmouth Corporation	Borough Engineer's Office, Town Hall, Portsmouth	do.
Alterations, etc., Rosapenna Hotel, Carrigart	Earl of Leitrim	W. J. Fennell, Architect, 2, Wellington-place, Belfast	do.
*Road Repair., etc., N. Fever Hosp., Winchmore Hill	M.A.B.	Office of the Board, Embankment, E.C.	Nov. 3
*Boardroom and Offices, Parkshot	Richmond Guardians	E. J. Partridge, Architect, 50, Lincoln's Inn Fields, W.C.	do.
Extension of Trinity-street	Llandudno U.D.C.	E. P. Stephenson, Engineer, Town Hall, Llandudno	do.
Steel Work for Covering in Sewage Tanks	Bognor U.D.C.	O. A. Bridges, Surveyor, Council Offices, Bognor	Nov. 5
*Retaining Wall Along Shore-road	Swanage U.D.C.	Council's Surveyor, Town Hall, Swanage	do.
Fence and Retaining Walls, Healey-lane	Batley Town Council	Borough Surveyor, Branch-road, Batley	do.
2,607 ft. of 9-in. Stoneware Pipe Sewer	Teddington U.D.C.	M. Harmsworth, Surveyor, Council Offices, Teddington	Nov. 7
*Sea Wall and other Works	Frinton-on-Sea U.D.C.	Council's Surveyor, Frinton-on-Sea	do.
*New Entrance, Floor, etc., to Ladies' Swimming Bath	St. Pancras Borough Council	T. W. Aldwinckle, F.R.I.B.A., 20, Denman-st., London Bridge, S.E.	

CONTRACTS.—*Continued.*

Nature of Work or Materials.	By whom Advertised.	Forms of Tender, etc., supplied by	Tenders to be delivered
Porter's Lodge at Sanatorium, North-road, Southall	Southall-Norwood U.D.C.	R. Brown, Engineer, Public Offices, Southall	Nov. 8
Making-up Avenue-road (part of)	do.	do.	do.
Tar-Paving to Playgrounds	Walsall Education Committee	H. H. McConnal, Architect, Bridge-street, Walsall	do.
Motors and Tramway Boosters	Preston Tramways Committee	W. H. Tittensor, Engineer, Power Station, Holmrook-rd., Preston	Nov. 9
Timber Piled Wharf on River Garnock	Noble's Explosives Co.	Works Manager, Ardeer Factory, Stevenston	Nov. 11
Dredger Work	do.	do.	do.
*New Coastguard Buildings at St. Anne's Head	Admiralty	Civil Engineer, H.M. Dockyard, Pembroke Dock	do.
Removal, Re-erection, etc., of 450 I.H.P. Engine	Swansea Corporation	C. A. L. Prusmann, Borough Electrical Engineer, Strand, Swansea	Nov. 12
Removal, Re-erection, etc., of 225-kw. Dynamo	do.	do.	do.
8-Ton Travelling Hand Crane	do.	do.	do.
Surface Water Drains	Dover Town Council	H. E. Stilgoe, Borough Engineer, Maison Dieu House, Dover	Nov. 15
Branch Shops, Shiney-row	Newbottle District Co-oper. Soc., Ltd.	A. Martyn, Secretary, Offices of Society, Newbottle	Nov. 25
*New Schools, Newcastle-on-Tyne	The Governors	Clerk, 2, Collingwood-street, Newcastle-on-Tyne	Nov. 28
*Supply of Stores, Materials, etc.	Camberwell Borough Council	Borough Engineer, Town Hall, Camberwell, S.E.	Dec. 8
24 Miles of Electric Tramways	Shanghai Municipal Committee	J. Pook & Co., 63, Leadenhall-street, London, E.C.	Mar. 31-05
Fence, Walling, Roadmak'g, Old Town, Hebden Bridge		J. Judson & Hudson, Architects, Bogthorn, near Keighley	No date.
Stores	G.N. Railway Co. (Ireland)	T. Morrison, Secretary, Amiens-street Terminus, Dublin	do.
Alteration to Printing Works, Pontefract	Mr. O. Holmes	Tennant & Bagley, Architects, Pontefract	do.
Five Shops and Three Houses, Gillygate, Pontefract	do.	do.	do.
Rebuilding Warehouse, Thornton-road, Bradford		E. H. Parkinson, Architect, Old Bank-chambers, Bradford	do.
*Demolishing House, Hampton Wick	Owner	W. H. Hope, Architect, Seymour-road, Hampton Wick	do.
*University Building, Cape of Good Hope		Hawke & McKinlay, 35, Craven-street, Strand, W.C.	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in
*Rate Collector and Surveyor's Assistant	Henley-on-Thames Corporation	100*l.*	Oct. 25
*Instructor in Manual Training (Metal Work)	London C.C.	100*l.*	Oct. 29
*Assistant Instructor in Manual Training (Metal Work)	do.	80*l.*	do.
*Expert to Advise	Dublin Education Committee	700*l.*	Nov. 15

Those marked with an asterisk (*) are advertised in this Number. *Competitions*, iv. *Contracts*, iv. vi. viii. x. *Public Appointments*, xvii.

TENDERS.—*Continued from page 427.*

LONDON BOARD OF EDUCATION TENDERS.

Islington, S., Vittoria-place (for Reversal of Stepping, etc.).

E. Lawrance & Sons	£565	0	Thompson & Beveridge	£458	0
W. Martin	550	0	Barrett & Power	457	0
A. Porter	532	0	H. Bouneau, 1A and 2, Royal Victor-place, Old Ford*	444	10
McCormick & Sons	532	0			
Stevens Bros.	486	0			
C. Dearing & Son	460	0			

Deptford, Clyde-street Pupil Teachers' Centre (for Partitions, etc.).

J. & C. Bowyer	£497		W. Downs	£426	
Holliday & Greenwood	450		H. Groves	418	
E. P. Bulled & Co.	442		T. D. Leng	415	
J. Garrett & Son	437		Lathey Bros., Newroad, Battersea*	412	

Central Hackney, Wilton-road (for Acceptance of Tender for Partitions, etc.).

Parrott & Isom	£585	0	L. H. & R. Roberts	£244	0
Barrett & Power	325	0	A. Porter	241	0
H. Bouneau	306	10	W. Shurmur & Sons, Ltd. Riverside Works, Upper Clapton*	234	0
Stevens Bros.	286	0			
Staines & Son	286	0			
A. J. Sheffield	279	0			
E. Lawrance & Sons	266	0			

Islington, W., Caledonian-road (for Repairs to Roof).

	With lead.	With zinc.	With copper.
Stevens Bros., 1A, Yongepark, Seven Sisters-road	£219	£148	£163*

Lewisham, Holbeach-road (for Heating Apparatus in Connexion with Enlargement).

W. G. Cannon & Sons	£319	0	Brightside Foundry & Engineering Co., Ltd.	£229	0
H. C. Price, Lea, & Co.	297	0	J. Grundy	227	0
Wright Bros.	275	0	G. & E. Bradley	221	10
Bates & Sons	249	0	J. & F. May, 33 & 35, Whetstone-park*	220	0

Whitechapel, Chicksand-street (for Works to Offices).

A. Porter	£649	0	J. Peattie	£348	0
G. Parker	497	0	Barrett & Power	331	0
Willmott & Sons	422	0	F. Bull, 31, Old Hill-street, Upper Clapton*	329	0
R. P. Beattie	358	0			
Stevens Bros.	353	7			

Bow and Bromley, Fern-street, Devon's-road (for New House for Schoolkeeper).

Messrs. Treasure & Son (the contractors for the new schoo now being erected). The cost of this work to be calculated upon the contractors' schedule of prices for the new school.

LONDON.—For the supply, delivery, and erection of the condenser and other piping, valves, etc., required for the first portion of the Greenwich generating-station, for the London County Council:—

Clayton, Goodfellow, & Co., Ltd.	£11,668 0 0
Westwood & Wrights	8,473 0 0
Sheepbridge Coal & Iron Co.	8,014 8 0
E. Le Bas & Co.	7,430 9 2
J. Musgrave & Sons, Ltd.	7,365 0 0
Holwell Iron Co., Ltd.	6,974 12 5
Aiton & Co.	6,910 15 10
J. Spencer, Ltd.	6,725 2 10
Sir Hiram Maxim's Electrical Engineering Co.	6,486 12 3
J. Oakes & Co., Alfreton*	6,418 13 1

LONDON.—For the supply, delivery, and erection of the steam, exhaust, and other piping, valves, etc., required for the first portion of the Greenwich generating station, for the London County Council:—

J. Fraser & Son	£15,468	9	0	T. Piggott & Co., Ltd.	£10,559 10 0
J. G. Moore	11,940	18	9	Alton & Co.	10,530 19 6
Hefford & Shuttlewood, Ltd	11,513	3	6	Foster Bros., Ltd.	10,145 14 11
T. Potter & Sons	11,247	2	3	S. Russell & Sons	10,095 19 0
J. Musgrave & Sons	11,242	7	4	Mechan & Sons, Ltd.	9,834 5 0
Westwood & Wrights	10,801	0	0	Stirling Boiler Co., Ltd.	9,792 15 9
E. Le Bas & Co.	10,592	15	0	J. Spencer, Ltd., Wednesbury*	9,785 2 0

[Messrs. J. Spencer, Ltd., to be allowed to sublet the following portions of the work in connexion with the steam and exhaust piping, etc., to the undermentioned firms, or to such other persons or firms as may be approved by the engineer under the contract, namely: (1) To the Holwell Iron Co., Ltd., Melton Mowbray, the supply of the cast-iron work; (2) to Messrs. T. Piggott & Co., Ltd., Birmingham, the supply of the riveted pipes; and (3) to the Cape Asbestos Co., Ltd., London, the supply of the pipe covering.]

LONDON.—For the supply of the centrifugal and other pumps, motors, strainers, etc., required for use in connexion with the first portion of the Greenwich generating-station, for the London County Council:—

Andrew, Barclay, Sons, & Co., Ltd.	£10,500 0
Electrical Co., Ltd.	10,319 10
Johnson & Phillips, Ltd.	10,228 15
E. Scott & Mountain, Ltd.	9,921 3
British Westinghouse Electric & Manufacturing Co., Ltd.	9,807 0
W. H. Allen, Son, & Co., Ltd.	9,800 0
Bruce, Peebles, & Co., Ltd.	9,795 0
Vickers, Sons, & Maxim	9,071 0
Entwisle & Gass, Ltd.	£9,105 0 £9,050 0
Gwynnes, Ltd.	8,575 0
J. Cochrane	8,500 0
Electric Construction Co., Ltd., Wolverhampton*	8,083 0
Mirrlees Watson Co., Ltd. (incomplete tender)	652 0
J. Thom (incomplete tender)	120 10

The Electric Construction Company, Ltd., to be allowed to sub-let the following portions of the work in connexion with the pumping plant referred to to the undermentioned firms, or to such other persons or firms as may be approved by the engineer under the contract, namely, (1) to Messrs. Drysdale & Co., Glasgow, the supply of centrifugal pumps; (2) to the Edward's Air-Pump Syndicate, London, the supply of air-pumps; (3) to Messrs. F. Pearn & Co., Manchester, the supply of the artesian well-pump; (4) to Mr. J. Thompson, Wolverhampton, the supply of the fixed strainers; and (5) to Messrs. H. Wallwork and Co., the supply of worm gearing.

LONDON.—For branch drainage at Infirmary, East Dulwich-grove, S.E., for Southwark Guardians. Mr. G. D. Stevenson, architect, 13 & 14, King-street, Cheapside, E.C.:—

G. Newton, Southwark Bridge-road, S.E... £2,250

LONDON.—For the supply of three electric car-traversers, two required for the New-cross car-sheds, and one for the Camberwell car-shed, of the London County Council Tramways:—

J. M. Henderson & Co.	£2,406 0 0
J. Buchanan & Son	2,299 11 6
Cowans, Sheldon, & Co., Ltd.	1,955 0 0
R. W. Blackwell & Co., Ltd.	1,950 0 0
Heenan & Froude, Ltd.	1,872 3 0
Brush Electrical Engineering Co., Ltd.	1,850 0 0
Dick, Kerr, & Co., Ltd.	1,828 4 0
J. Hitchin & Son, Ltd.	£1,855 15 0 £1,773 15 0
Ransomes & Rapier, Ltd.	£2,005 10 0 £1,765 10 0
Hurst, Nelson, & Co., Ltd.	1,646 8 0
Jessop & Appleby Brothers, Ltd.	1,534 6 6
C. & A. Musker (1901), Ltd., Liverpool*	1,456 10 0

LONDON.—For the erection of new sheds and quay wall at Glengall Wharf, for the Camberwell Borough Council. Mr. W. Oxtoby, Surveyor, Town Hall, Peckham-road, S.E.:—

A. N. Coles	£4,641	0	J. Shelbourne & Co.	£2,723	0
J. King	3,326	0	F. & H. F. Higgs	2,685	0
G. J. Anderson	3,300	0	Sims & Woods	2,663	0
R. & E. Evans	3,125	0	A. Facey & Son	2,427	10
Leslie & Co., Ltd.	2,850	0	G. Parker, Sumner-road, Peckham*	2,337	0
T. W. Pedrette	2,833	19			
Medway's Safety Lift & Elevator Co.	2,825	10			

LONDON.—For sanitary fittings at Infirmary, East Dulwich-grove, S.E., for Southwark Guardians. Mr. G. D. Stevenson, architect, 13 & 14, King-street, Cheapside, E.C.:—

G. Newton, Southwark Bridge-road, S.E... £1,800

LONDON.—For penstocks, northern outfall sewer enlargement (Section D), for the London County Council:—

J. Cochrane	£3,650	Blakeborough & Sons	£3,450
Yates & Thom	3,538	Hunter & English	3,370
Ashton, Frost, & Co.	3,499	Glenfield & Kennedy, Kilmarnock*	3,045

LUDLOW.—For alterations and additions to outfall works, for the Town Council:—

H. Ashley	£4,269	0	0	A. Braithwaite & Co.	£3,447 17 7
J. Byrom	4,184	5	0	T. Speake	3,303 18 4
W. Westwood	4,005	7	3	G. Rutter	3,302 2 3
Bennett Bros.	3,900	0	0	E. Boore	3,288 1 9
J. & T. Binns	3,763	19	8	Ross & Crabtree	3,050 0 0
B. Firth & Co.	3,763	0	0	W. Morley & Son	2,998 13 8
Horner & Maud	3,611	19	8	H. Holloway, Bilston-road, Wolverhampton*	2,785 8 9
G. Law	3,606	0	0		
J. A. Meredith	3,589	15	3		
Sutherland & Thorpe	3,568	10	2		
G. Bell	3,554	0	0		
E. Powell	3,505	8	0		

LUTON.—For paving and other works of private improvement in the undermentioned streets:—

	Studley-road	Biscott-road.
T. Free & Sons	£1,222 17 7	£487 2 5
G. Powdrill	1,490 0 0	560 0 0
Patent Victoria Stone Co., London*	1,184 8 0	472 10 3

MORLEY (Yorks).—For extensions to the Rag-place, Fountain-street, Mills, for Mr. H. H. Watson. Messrs. T. A. Buttery & S. B. Birds, architects, Queen-street, Morley :—

Builder: Pearson & Ainsworth, Britannia-road, Morley* £191 0
Joiner: J. Asquith, Peel-street, Morley* .. 64 0
Slater: J. Atkinson & Sons, Ltd., Whitehall-road, Leeds* 26 15

NEWARK.—For making and forming 800 superficial yards of road at new infirmary, Bowbridge-road, for the Rural District Council. Mr. A. Marshall, architect, King-street, Nottingham :—

F. Whitelocke £305 0 0 | W. Smith, Builder, Newark* .. £271 10 0
C. E. Cox 298 11 8
J. Bradley .. 280 18 0

NOTTINGHAM.—For warehouse, cottage, etc., Traffic-street, Nottingham. Messrs. A. R. Calvert & William R. Gleave, architects, 18, Low Pavement, Nottingham :—

W. H. Whitton & Co.* £1,183

[Lowest of twelve tenders.]

NOTTINGHAM.—For shops, Colwick-road, Nottingham. Messrs. A. R. Calvert & William R. Gleave, architects, 18, Low Pavement, Nottingham :—

T. Barton & Co.* £814

[Lowest of ten tenders.]

OSWESTRY.—For laying-out and construction of new street, sewers, etc., at Brynhafod. Messrs. Shayler & Ridge, surveyors, Oswestry :—

I. Jones ..... £680 0 | W. H. Thomas, Salop-road, Oswestry* £527 16
T. Taylor 580 0
J. E. M. Jones .. 575 0 | Jones & Evans .. 523 10

PENISTONE (Yorks).—For constructing sewage disposal works for the Urban District Council. Messrs. Spinks & Pilling, engineers, 20, Park-row, Leeds :—

G. Freeman & Sons, Hollinwood, Oldham* £2,600 19 7

[Sixteen other firms tendered.]

PONTYPRIDD.—For private street works, Graig-street, for the Urban District Council. Mr. P. R. A. Willoughby, Engineer and Surveyor to the Council, Pontypridd :—

W. Davies ..... £1,032 | A. G. Collins & Co., Barry* £862
R. J. Mathias 961

PONTYPRIDD.—For widening of carriageways and footways, Clifynydd, for the Urban District Council. Mr. P. R. A. Willoughby, Engineer and Surveyor :—

G. Rutter ..... £1,115 | A. G. Collins & Co., Barry* £975
M. Griffiths 1,112
W. C. Hunkley .. 991

PORTSMOUTH.—For fitting up new branch store in Eastney-road, for the Portsea Island Co-operative Society, Ltd. Mr. G. E. Smith, architect, Victoria-road North, Southsea :—

Maund, Old-street, London £597 10

SOUTHAMPTON.—For the rebuilding of Nos. 43 & 45, Above Bar, for the Hampshire Advertiser Printing and Publishing Co., Ltd. Mr. William Burrough Hill, architect, Southampton :—

A. Wright & Son.. £11,075 | Jenkins & Sons .. £10,576
Playfair & Toole.. 10,970 | J. Nichol 10,543
J. Harris ..... 10,817 | Golding & Ansell 10,200
F. Osman ..... 10,795 | Dyer & Sons, Southampton*.. 9,998
H. Stevens & Co.. 10,773
H. Cawte 10,753

SPARKHILL.—For private street works, Sparkhill, near Birmingham, for the Yardley Rural District Council. Mr. A. W. Smith, Engineer and Surveyor, Council House, Sparkhill, near Birmingham :—

W. H. Jones, Great Tindal-street, Birmingham* £3,052 15 6
J. Young, Oxford-street, Rugby* 2,981 14 0

SWINESHEAD (Lincs.).—For erecting an infants' classroom, etc., Cowley's School, Swineshead, near Boston, for the Managers of Cowley's School. Mr. J. Rowell, architect, Church-lane, Boston :—

Rose & Son .... £700 0 0 | Langley & Sons, Kirton, near Boston* £369 0 0
Richardson 484 0 0
Mowbray 460 8 4

WALTHAMSTOW.—For Mission Grove School, for Walthamstow Urban District Council (Architect's department). Mr. H. Prosser, architect. Quantities by Mr. G. T. G. Wright, F.S.I., 3, Great Winchester-street, E.C. :—

J. & J. Dean .... £11,715 | Lawrence & Son.. £10,692
Martin, Wells, & Co. ..... 11,700 | Battley, Sons, & Holness 10,674
Stimpson & Co. .. 11,700 | A. J. Bateman .. 10,657
Sands & Burley .. 11,500 | Knight & Sons .. 10,497
Myall & Upson .. 11,355 | F. J. Coxhead 10,200
Pollard & Brand.. 11,000 | Rowley Bros., Tottenham* .. 9,965
R. & E. Evans .. 10,721

WHITWICK (Leicestershire).—For erecting Holy-cross new church, for the Rev. M. J. O'Reilly. Messrs. McCarthy & Co., architects, Central-chambers, Coalville. Quantities by architects :—

G. Hodges ..... £6,990 | Bradshaw Bros. .. £5,856
Lowe & Sons .... 6,730 | E. Orton 5,814
Atkin Bros. ..... 6,185 | Griffin Bros. 5,793
W. F. Harding.... 6,160 | F. Bradford 5,598
Barker & Son .... 6,038 | C. Wright 5,499
A. Faulks ..... 5,998 | W. Moss, Coalville* 5,455
T. Hubert ..... 5,946 | Storer Bros. 5,278

[Architects' estimate, £5,700.]

YARDLEY.—For new surface water drains and gullies on Stratford and Warwick main roads, for the Highways and Bridges Committee of Worcestershire County Council. Mr. J. H. Garrett, County Road Surveyor, Shirehall, Worcester :—

T. J. Mason .. £986 16 0 | R. W. Fitzmaurice & Co. £567 0 9
J. White, jun. 691 2 6 | Currall, Lewis, & Co. 558 0 6
Sutherland & Thorpe .... 593 18 0 | A. Cooper 506 17 0
G. M. Kerry & Co. ..... 578 3 0 | S. Wood 479 1 6
T. Price & Son 576 3 6 | E. Boore, Smethwick* 400 14 4

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